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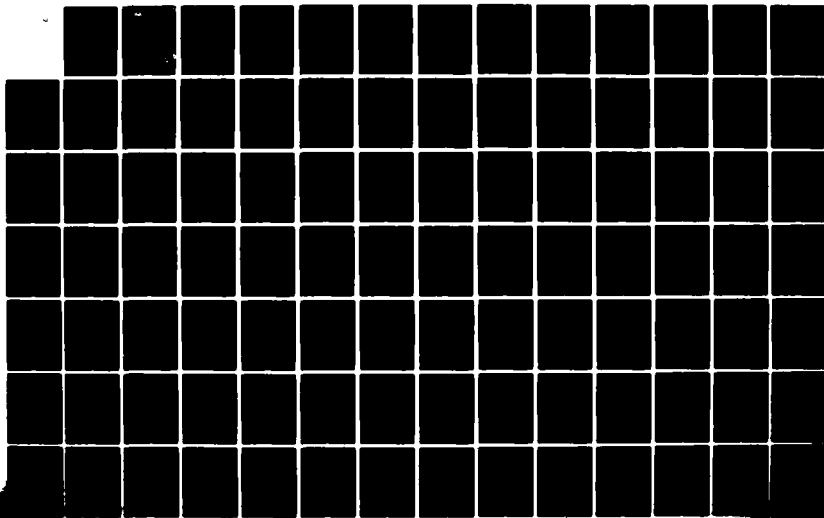
ELECTRONIC PRINCIPLES INVENTORY KESLER TECHNICAL
TRAINING CENTER(U) AIR FORCE OCCUPATIONAL MEASUREMENT
CENTER RANDOLPH AFB TX M THOMASSON APR 84

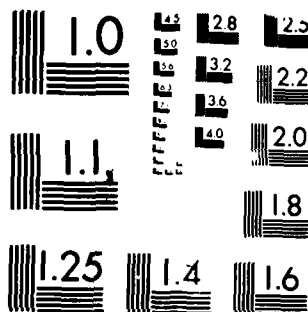
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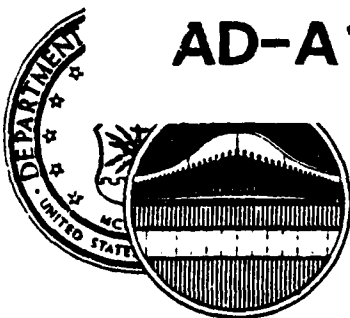
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AD-A142 030

UNITED STATES AIR FORCE

EPI REPORT

ELECTRONIC PRINCIPLES INVENTORY

KEESLER TECHNICAL TRAINING CENTER

AFPT 90-EPI-490

APRIL 1984

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OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT CENTER
AIR TRAINING COMMAND
RANDOLPH AFB, TEXAS 78150

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PREFACE

This report presents the results of an Air Force Electronics Principles Survey of those specialties for which electronics training is provided at Keesler Technical Training Center, Keesler AFB, Mississippi. Authority for conducting electronics principles surveys is contained in AFR 35-2.

The survey instrument used to collect data from career ladder incumbents was the Electronics Principles Inventory (EPI). This survey instrument was originally developed by Dr. Hendrick W. Ruck and Major Thomas J. O'Connor in 1976. It was revised and updated in 1979 by Mr. James L. Slovak and Captain Frederick B. Bower, Jr. Mr. Slovak further refined and updated the instrument in 1981.

Second Lieutenant Mary Thomasson analyzed the data and wrote the final report. Computer support was provided by Ms. Olga Velez. This report has been reviewed and approved by Lieutenant Colonel Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Center, Randolph AFB, Texas 78150.

Copies of this report are available to Air Staff sections, major commands, and other training and management personnel. Requests for additional copies should be addressed to the USAF Occupational Measurement Center, attention of the Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas 78150.

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SUMMARY OF RESULTS

1. Survey Coverage: The Electronics Principles Inventory (EPI) was administered to 3,447 5- and 7-skill level members across Air Force samples of 12 specialties which receive electronics fundamentals training at Keesler Technical Training Center.

2. Five-Skill Level Use of Electronics Principles: Thirty percent or more of 5-skill level personnel in 10 of the 12 AFSCs studied answered "yes" to 96 questions, indicating they used 18 categories of electronics principles. Personnel in two AFSCs (20550 and 30750) reflected less use of electronics principles.

3. Five- and Seven-Skill Level Differences: Large differences between 5- and 7-skill level use of electronics principles were found in only 4 of the 12 specialties studied (304X0, 304X1, 305X4, and 328X2). The largest differences were found in AFS 328X2.

4. Discussion: Personnel in the 205X0 and 307X0 specialties use fewer electronics principles than the others, which may indicate the need for a different type or degree of training for personnel in these specialties. Data are provided to assist in reviewing the electronics principles requirements for all 12 specialties.

Electronics Principles Inventory Keesler Technical Training Center

INTRODUCTION

The USAF Occupational Measurement Center provides specialty task data to training personnel in the form of occupational survey reports (OSR) and training extracts. Such data are presented in task statements which are quantified according to percent members performing, relative time spent, task difficulty, and training emphasis. This task statement data provides a precise picture of the kinds of functions personnel in a specific AFS actually perform at a specific point in time. When properly applied, OSR data can be a powerful tool in the design of training content.

Generally speaking, OSR task statements are sometimes difficult to translate directly into knowledge requirements. This is especially true of tasks which require some degree of electronics knowledge. Prior to development of the Electronics Principles Inventory, training managers and command representatives had to rely on subjective judgments to arrive at the kinds of knowledge required to perform electronics-oriented tasks. A need for more objective criteria for determining the amount of electronics knowledge necessary to perform Air Force jobs resulted in the development of a new type of USAF job inventory, called the Electronics Principles Inventory.

The EPI is a knowledge-based job inventory which identifies the range of electronics principles personnel must understand to perform any electronics-oriented job. Training managers can use EPI data in conjunction with OSR data to determine precisely what specialists do and what electronics principles they employ on the job. By using EPI and OSR data in this manner, training managers satisfy one of the most important aspects of the Instructional Systems Development (ISD) process: determine what specialists do on the job before developing a course to train individuals to perform the job.

History

In 1974, the initial request to develop a method of determining electronics fundamentals used on the job was made by Major General Charles G. Cleveland, Deputy Chief of Staff, Technical Training, Air Training Command. At the time, General Cleveland needed some means of accurately measuring how much electronics fundamentals training was actually used on the job. He envisioned using EPI data to streamline training by eliminating "nice-to-know" information in the area of electronics security.

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At the General's request, Dr. Walter E. Driskill, Chief of the Occupational Analysis Branch, set up a task force to conceptualize, develop, and apply a method for measuring job usage of electronics principles. The task force was composed of personnel from the Occupational Analysis Branch who were well qualified in theoretical physics and electronics. These personnel also had considerable expertise in task analysis and survey development. With assistance by these individuals, electronics experts from 5 ATC Technical Training Centers, averaging 12 years maintenance experience and 4 years of electronics principles instruction experience, spent 3 weeks working on the development of the EPI. This tentative EPI then was reviewed and refined by over 300 maintenance personnel from SAC, TAC, ADC, MAC, and AFSC, as well as personnel at the Electronics Engineering Department of the USAF Academy and the Air Force Human Resources Laboratory. The resulting EPI contained 1,257 items under 62 subject-matter areas covering all electronics principles training given at the 5 ATC Technical Training Centers.

During 1977, this EPI was administered to more than 11,000 airmen in 54 different Air Force specialties. Since the aim of the EPI was to determine the extent electronics fundamentals were actually used in the performance of Air Force jobs, the logical person to survey was one at the worker level with sufficient time on the job to understand all that it entailed. Consequently, only 5-skill level personnel with more than 18 months active duty service were surveyed. Results from this project were used extensively by the various training managers to refine their respective plans of instruction.

This original EPI was revised in 1978 and 1979 to more accurately reflect some of the computer-oriented and various other electronics principles. The revision was accomplished by Mr. James L. Slovak, Inventory Development Specialist, and Captain Frederick Bower, Occupational Analyst, after consultation with electronics principles instructors at each of the technical training centers. Mr. Slovak conducted a further revision of the EPI in 1981, following additional consultation with electronics principles experts. Following this extensive review, the EPI was reprinted in its current format, which includes 1,366 items.

Survey Administration

The electronics principles inventory was administered to 5- and 7- skill level personnel in those specialties for which electronics training is provided at Keesler AFB. These AFSs included:

205X0	Electronics Intelligence Operations
304X0	Wideband Communications Equipment
304X1	Navigation Aids Equipment
304X4	Ground Radio Communication
305X4	Electronics Computer and Switching Systems
307X0	Telecommunications Systems Control
328X0	Avionic Communications
328X1	Avionic Navigation Systems

328X2 Airborne Warning and Control Radar
328X3 Electronics Warfare Systems
328X4 Avionic Inertial and Radar Navigation Systems
328X5 Airborne Command Post Communication Equipment

Inventories were administered to a stratified random sample of career ladder incumbents. In each specialty surveyed, booklets were sent to selected career ladder incumbents randomly selected across the 5- and 7-skill levels. No more than 500 booklets were administered to any given specialty. Table 1 shows the specialty representation of the sample. The inventories were administered between December 1982 and July 1983.

The EPI booklet differs from the usual task-oriented survey in two major respects. First, the EPI asks two general questions: "What do you do," and "What electronics knowledge do you use in performing your job?" The second difference is the EPI can be administered to anyone who works with electronics. That is, it is general in nature, unlike the usual job inventory, which is aimed at a single specialty.

TABLE 1
SPECIALTY REPRESENTATION IN KEESLER EPI SAMPLE

<u>AFSC</u>	<u>TOTAL 5- AND 7- SKILL LEVEL ASSIGNED</u>	<u>DESIRED SAMPLE*</u>	<u>FINAL SAMPLE</u>	<u>PERCENT OF ASSIGNED IN SAMPLE</u>	<u>PERCENT OF DESIRED IN SAMPLE**</u>
205X0	477	463	281	59%	61%
304X0	2,066	500	305	15%	61%
304X1	932	500	320	34%	64%
304X4	3,377	500	310	9%	62%
305X4	2,156	500	291	13%	58%
307X0	1,487	500	318	21%	64%
328X0	1,567	500	332	21%	66%
328X1	1,745	500	335	19%	67%
328X2	205	179	105	51%	87%
328X3	2,013	500	340	17%	68%
328X4	987	500	331	34%	66%
328X5	300	289	168	56%	58%

* For large specialties, a maximum of 500 cases was selected. Larger percentages of small population specialties were selected to ensure their representation in the final sample.

** A minimum acceptable level of 50 percent of desired sample was used as a cutoff for closing field administration.

PRESENTATION OF RESULTS

Personnel responded "yes" or "no" to the 1,366 electronics principles questions as related to their present job. Table 2 shows the specific areas covered in the inventory. Task Factor Print Program (FCPRTS) computer printouts are presented in the Appendix, beginning on page 2. The printouts display the percentage of personnel in each AFSC group who responded "yes" to each question asked in the EPI.

In accordance with ATC Regulation 52-22, electronics principles used by at least 50 percent or more 5-skill level personnel should be considered for inclusion in a basic residence course. Principles used by at least 30, but less than 50 percent, may be considered for inclusion in formal training, although not necessarily in a resident course.

The journeyman job (5-skill level) is the most appropriate target for making training decisions. Five-skill level personnel have been on the job a sufficient amount of time to know what electronics principles are used. Also, unlike 7-skill level personnel, they are still in technical jobs rather than supervisory positions.

In the following sections, electronics principles used by 5-skill level personnel are discussed. To examine what changes occur between the two skill levels, 7-skill level data were collected. The results of a comparison between 5- and 7-skill level personnel are discussed in the 5- and 7-skill level difference section.

TABLE 2
EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREAS TITLE</u>	<u>BEGINNING ITEM NUMBER</u>
1	MATHEMATICS	A1
2	DIRECT CURRENT	A12
3	RESISTORS/RESISTIVE CIRCUIT	A25
4	METER/MULTIMETER	B60
5	ALTERNATING CURRENT	B68
6	INDUCTORS/INDUCTIVE REACTANCE	B75
7	CAPACITORS/CAPACITIVE REACTANCE	C97
8	TRANSFORMERS	C126
9	MAGNETISM	C168
10	RCL CIRCUITS	D180
11	TIME CONSTANTS	D226
12	FILTERS	D233
13	COUPLING	E249
14	SOLDERING/SOLDERLESS CONNECTIONS	E263
15	RELAYS	E277
16	MICROPHONES AND SENSING DEVICES	F295
17	SPEAKERS	F309
18	OSCILLOSCOPES	F324
19	SEMICONDUCTOR DIODES	G342
20	TRANSISTORS	G383
21	TRANSISTOR AMPLIFIERS	G407
22	SOLID-STATE SPECIAL-PURPOSE DEVICES	H453
23	POWER SUPPLIES	H467
24	OSCILLATORS	H498
25	MULTIVIBRATORS	I529
26	LIMITERS AND CLAMPERS	I540
27	ELECTRON TUBES	I550
28	ELECTRON TUBE AMPLIFIERS AND CIRCUITS	J589
29	SPECIAL-PURPOSE ELECTRON TUBES	J596
30	HETERODYNING AND MODULATION- DEMODULATION	J611
31	AM SYSTEMS	K618
32	FM SYSTEMS	K638
33	NUMBERING SYSTEMS	K660
34	LOGIC FUNCTIONS	L685
35	BOOLEAN EQUATIONS	L718
36	COUNTERS	L730
37	TIMING CIRCUITS	L752
38	USE OF SIGNAL GENERATORS	M764
39	MOTORS AND GENERATORS	M778
40	METER MOVEMENTS	N809

TABLE 2 (CONTINUED)
EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREAS TITLE</u>	<u>ITEM NUMBER</u>
41	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	N821
42	WAVESHAPING CIRCUITS	N833
43	SINGLE OR INDEPENDENT SIDEBAND SYSTEMS	0854
44	PULSE MODULATION SYSTEMS	0884
45	ANTENNAS	0924
46	TRANSMISSION LINES	P969
47	WAVEGUIDES AND CAVITY RESONATORS	P1000
48	MICROWAVE AMPLIFIERS AND OSCILLATORS	P1044
49	REGISTERS	Q1121
50	STORAGE DEVICES	Q1128
51	DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS	Q1155
52	PHANTASTRONS	Q1177
53	SCHMITT TRIGGERS	Q1183
54	CABLE FABRICATION	R1186
55	INPUT/OUTPUT (PERIPHERAL) DEVICES	S1188
56	PHOTO SENSITIVE DEVICES	S1202
57	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	S1207
58	INFRARED SYSTEMS	T1216
59	LASERS	T1244
60	DISPLAY TUBES	T1278
61	TELEVISION	T1294
62	COMPUTERS, MICROPROCESSORS, AND PROGRAMMING	U1304
63	DB AND POWER RATIOS	U1361

5-Skill Level Use of Electronics Principles

Beginning on page 1 of the Appendix, the survey data for 5-skill level members are presented. The data reflects the percent answering "yes" to each question; that is, percent using each referenced principle. While training personnel should study the appendix data in detail, this section presents the highlights of that data.

When looking at the data, note that the 20550 and 30750 personnel do not use the electronics principles included in the inventory to the same extent as the other AFSCs. Examples of these differences can be seen in Table 3. This may indicate the need for a different type or degree of training for personnel in these specialties.

Thirty percent or more 5-skill level personnel in all AFSCs (except the 20550 and 30750) answered "yes" to 96 questions in the electronics principles survey. These 96 questions generally fell into 1 of 18 categories of electronics principles related to the following:

- mathematics
- direct current
- resistors/resistive circuits
- meters/multimeters
- alternating current
- capacitors/capacitive reactance
- transformers
- RCL circuits
- filters
- soldering/solderless connections
- relays
- oscilloscopes
- transistors
- solid-state special-purpose devices
- power supplies
- oscillators
- heterodyning and modulation-demodulation
- meter movements

Note that these 18 categories cover a wide range of electronics principles, indicating career ladder members typically need a large amount of formal training in electronics principles. Yet, the above list does not exhaust training needs. When considering each AFSC separately, many more categories are included. In fact, the only categories that have less than 30 percent of the personnel responding "yes" in all AFSCs are:

- synchronous vibrations (chopper circuits)
- infrared systems
- lasers
- display tubes
- television

This suggests that electronics principles relating to these categories should not be included in a formal training course. The data also indicate some principles are appropriate for a common electronics principles course and some should be included only in the SETS portion of a course. For example, personnel in AFSCs 30554 and 32852 are using principles related to computers, microprocessors, and programming to a greater extent than the other specialties (see page 68 of the Appendix). This suggests that these principles could be more effectively taught in the SETS portion of the 30554 and 32852 courses, rather than the common electronics principles course.

TABLE 3

**EXAMPLES OF PRINCIPLES WHICH DIFFERENTIATE PERSONNEL IN AFSCs 20550 AND 30750 FROM OTHERS
(PERCENT MEMBERS USING)**

<u>PRINCIPLES</u>	<u>TOTAL*</u> <u>SAMPLE</u>	<u>DAFSC</u> <u>20550</u>	<u>DAFSC</u> <u>30750</u>
DO YOU INSPECT RESISTORS?	78	0	8
DO YOU ADJUST RESISTORS?	78	0	10
DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY POTENTIOMETER?	80	1	19
DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES?			
DO YOU WORK WITH CAPACITORS IN AC CIRCUITS?	83	2	20
DO YOU WORK WITH CAPACITORS IN DC CIRCUITS?	72	3	8
DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC AND AC?	71	3	8
DO YOU SOLDER CONNECTIONS?	80	0	16
DO YOU DESOLDER CONNECTIONS?	80	0	17
DO YOU INSPECT POWER SUPPLIES?	75	1	11
DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES?	77	1	9

* Represents average of personnel in AFSCs except 20550 and 30750

5- AND 7-SKILL LEVEL DIFFERENCES

To determine if variations occur between 5- and 7-skill level jobs, 7-skill level data were also examined.

Differences between the 5- and 7-skill level groups are reflected in the listings of tasks in Tables 4 through 7. The comparison of 5- and 7-skill level groups showed the differences were important in only four specialties. In general, differences were found in tasks performed by 5-skill level personnel to a greater extent than 7-skill level personnel. As seen in Tables 4 and 6, 30450 and 30554 airmen perform more principles related to power supplies and soldered connections than 30470 and 30574 personnel. Table 7 reveals the largest differences between the 5- and 7-skill level personnel are in AFS 328X2.

Although 7-skill level airmen still use electronics principles, very few were being performed to a greater extent by 7-skill level than 5-skill level personnel. Usually, 7-skill level personnel are responsible for supervisory and management tasks which were not included in the Electronics Principles Inventory.

TABLE 4

**PRINCIPLES WHICH BEST DIFFERENTIATE 304X0 5- AND 7-SKILL LEVEL PERSONNEL
(PERCENT MEMBERS USING)**

PRINCIPLES			DAFSC 30450 (N=182)	DAFSC 30470 (N=123)	DIFFERENCE
H469	H2-3	DO YOU CLEAN POWER SUPPLIES?	78	52	+26
E283	E3-7	DO YOU REMOVE OR REPLACE RELAYS?	73	49	+24
E264	E2-2	DO YOU SOLDER CONNECTIONS?	84	60	+24
E265	E2-3	DO YOU DESOLDER CONNECTIONS?	84	60	+24
H470	H2-4	DO YOU ALIGN OR ADJUST POWER SUPPLIES?	82	59	+23
H468	H2-2	DO YOU INSPECT POWER SUPPLIES?	82	59	+23
E267	E2-5	DO YOU INSPECT SOLDERED CONNECTIONS?	83	60	+23
E271	E2-9	DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS?	81	59	+22
E272	E2-10	DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS?	80	58	+22
E269	E2-7	DO YOU MAKE HARDWIRE CONNECTIONS?	80	58	+22
C128	C2-3	DO YOU CLEAN TRANSFORMERS?	63	41	+22
E268	E2-6	DO YOU CLEAN OR TIN CONNECTIONS?	82	60	+22
H474	H2-8	DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS?	70	49	+22
H473	H2-7	DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES?	78	57	+21
E263	E2-1	IN YOUR PRESENT JOB, DO YOU CONNECT ELECTRONICS CIRCUITS USING SOLDERLESS CONNECTIONS OR SOLDERING TECHNIQUES?	82	61	+21
F327	F3-4	DO YOU TROUBLESHOOT ELECTRONICS CIRCUITS USING OSCILLOSCOPES?	80	59	+21
H472	H2-6	DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS?	70	50	+20
E270	E2-8	DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS?	79	59	+20

TABLE 5

**PRINCIPLES WHICH BEST DIFFERENTIATE 304X1 5- AND 7-SKILL LEVEL PERSONNEL
(PERCENT MEMBERS USING)**

PRINCIPLES			DAFSC 30451 (N=199)	DAFSC 30471 (N=122)	DIFFERENCE
D242	D3-10	DO YOU WORK WITH BAND-REJECT FILTERS?	73	47	+27
E275	E2-13	DO YOU PERFORM CRIMPING IN LIEU OF SOLDERING?	68	43	+25
F340	F3-17	DO YOU USE OSCILLOSCOPES TO OBSERVE PHASE RELATIONSHIPS?	79	55	+24
B91	B3-17	DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC (ALTERNATING CURRENT) INDUCTOR CIRCUITS?	54	30	+24
A39	A3-15	DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE?	40	16	+24
D241	D3-9	DO YOU WORK WITH BANDPASS FILTERS?	87	64	+23
D245	D3-13	DO YOU WORK WITH T-SECTION FILTER CONFIGURATIONS?	72	49	+23
A33	A3-9	DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY SIDE TAP?	79	57	+22
D240	D3-8	DO YOU WORK WITH HIGH PASS FILTERS?	82	61	+22
E263	E2-1	IN YOUR PRESENT JOB, DO YOU CONNECT ELECTRONICS CIRCUITS USING SOLDERLESS CONNECTIONS OR SOLDERING TECHNIQUES?	82	61	+22
D239	D3-7	DO YOU WORK WITH LOW PASS FILTERS?	84	62	+22
G407	G3-1	DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB?	74	52	+21
E269	E2-7	DO YOU MAKE HARDWIRE CONNECTIONS?	79	58	+21
G349	G1-8	DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONICS COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE?	80	59	+21
G348	G1-7	DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES?	71	50	+21
D233	D3-1	DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB?	84	63	+21
H497	H2-31	DO YOU WORK WITH SOLID-STATE POWER SUPPLY REGULATOR CIRCUITS?	84	63	+21

TABLE 6

**PRINCIPLES WHICH BEST DIFFERENTIATE 305X4 5- AND 7-SKILL LEVEL PERSONNEL
(PERCENT MEMBERS USING)**

PRINCIPLES			DAFSC 30554 (N=156)	DAFSC 30574 (N=136)	DIFFERENCE
H469	H2-3	DO YOU CLEAN POWER SUPPLIES?	76	46	+30
Q1149	Q2-22	DO YOU CLEAN STORAGE DEVICES?	72	44	+28
E268	E2-6	DO YOU CLEAN OR TIN CONNECTIONS?	78	51	+27
E264	E2-2	DO YOU SOLDER CONNECTIONS?	80	54	+26
E265	E2-3	DO YOU DESOLDER CONNECTIONS?	80	54	+26
E267	E2-5	DO YOU INSPECT SOLDERED CONNECTIONS?	80	54	+26
G348	G1-7	DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES?	59	33	+26
H473	H2-7	DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES?	79	54	+25
G356	G1-15	DO YOU DETERMINE DIRECTION OF CURRENT THROUGH A DIODE?	76	51	+25
I536	I1-8	DO YOU WORK WITH BISTABLE (FLIP-FLOP) MULTIVIBRATORS?	69	43	+25
A28	A3-4	DO YOU ADJUST RESISTORS?	79	54	+25
A35	A3-11	DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY POTENTIOMETER?	84	60	+24
G383	G2-1	DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB?	80	56	+24
I535	I1-7	DO YOU WORK WITH MONOSTABLE (ONE-SHOT) MULTIVIBRATORS?	65	41	+24
A25	A3-1	DO YOU WORK WITH RESISTORS OR RESISTIVE CIRCUITS IN YOUR PRESENT JOB?	79	55	+24
C97	C1-1	DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB?	79	55	+24
B71	B2-4	DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM WAVELENGTH IN YOUR PRESENT JOB?	59	35	+24
H470	H2-4	DO YOU ALIGN OR ADJUST POWER SUPPLIES?	79	56	+24
A29	A3-5	DO YOU MEASURE RESISTORS	80	57	+24

TABLE 7

**PRINCIPLES WHICH BEST DIFFERENTIATE 328X2 5- AND 7-SKILL LEVEL PERSONNEL
(PERCENT MEMBERS USING)**

PRINCIPLES			DAFSC 32852 (N=63)	DAFSC 32872 (N=43)	DIFFERENCE
P1048	P3-5	DO YOU USE OR REFER TO RADIO FREQUENCY (RF) LOSSES IN EXTERNAL CIRCUITRY FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	49	9	+40
B62	B1-3	DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE CURRENT?	70	35	+35
P1065	P3-22	DO YOU REMOVE OR REPLACE COMPLETE KLYSTRONS OR TWTs	60	26	+35
P1011	P2-12	DO YOU REMOVE OR INSTALL OTHER BENDS?	48	14	+34
F333	F3-10	DO YOU USE OSCILLOSCOPES TO MEASURE ALTERNATING CURRENT (AC) VOLTAGES	59	26	+33
P1008	P2-9	DO YOU REMOVE OR INSTALL DUMMY LOADS	56	23	+32
P1002	P2-3	DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS?	51	19	+32
P1004	P2-5	DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS	57	26	+32
P1007	P2-8	DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS?	57	26	+32
P1014	P2-15	DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS?	52	21	+31
P1005	P2-6	DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS?	59	26	+30
H482	H2-16	DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS	56	26	+30
0932	03-9	DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS?	54	28	+29
D189	D1-10	DO YOU USE OR REFER TO AVERAGE POWER (P SUB AVE) WHEN WORKING WITH RCL CIRCUITS?	48	19	+29
P981	P1-13	DO YOU TROUBLESHOOT TRANSMISSION LINES?	48	19	+29
P1006	P2-7	DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES?	48	19	+29
B63	B1-4	DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE POWER?	73	44	+29
P1010	P2-11	DO YOU REMOVE OR INSTALL H BENDS?	38	9	+29

DISCUSSION

This review of Electronics Principles for AFSs trained at Keesler AFB showed personnel in the 205X0 and 307X0 specialties do not use the electronics principles included in the inventory to the same extent as do the others. This may indicate the need for a different type of training for personnel in these specialties. An analysis of electronics principles used by each AFSC will be addressed in AFSC-specific occupational survey reports as they are accomplished.

The data provided in this report should be useful in reviewing both the common electronics principles training requirements for specialties trained at Keesler, as well as which AFSCs need additional electronics principles training. If additional computer products would be useful, please contact USAFOMC/OMYX, Randolph AFB, Texas 78150.

APPENDIX A

KEESLER EPI CAREER LADDERS, ELECTRONIC PRINCIPLES INVENTORY (EPI) DATA ARE PRESENTED BELOW EACH DUTY TITLE. DATA FOR THIS PRINTOUT WERE COLLECTED FROM CAREER LADDER INCUMBENTS DURING THE PERIOD DECEMBER 1982 THROUGH JULY 1983.

USE OF EPI PRINTOUT: THE PERCENT OF VARIOUS CAREER LADDER GROUPS RESPONDING TO EPI QUESTIONS IS LISTED TO THE RIGHT OF EACH EPI ITEM. THUS, THE APPROPRIATE SAMPLE CRITERION GROUPS CAN BE IDENTIFIED WITH THE COLUMN HEADINGS AT THE TOP RIGHT OF EACH PRINTOUT PAGE. THEN THE PERCENT OF THAT GROUP USING THE CONCEPT OR PIECE OF EQUIPMENT CAN BE IDENTIFIED.

USE OF EPI DATA: THESE DATA MAY BE USED IN HELPING TO IDENTIFY, DELINEATE, AND VALIDATE ELECTRONIC PRINCIPLES ITEMS IN THE STS. CRITERIA LISTED IN ATCR 52-22 FOR ABR TRAINING MAY BE USEFUL IN HELPING DEVELOP ENTRY-LEVEL ELECTRONIC PRINCIPLE COURSES. ALSO, CDC WRITERS MAY USE EPI DATA TO HELP DETERMINE AREAS TO EMPHASIZE IN 5- AND 7-SKILL LEVEL CDS, CONSISTENT WITH STS CODES.

FOR ASSISTANCE IN USING PRINTOUTS PHONE USAFOMC/OMYO, AUTOVON 487-5811.

VECTOR TYPE CODES:

(T) = 3 TIME SPENT BY ALL MEMBERS

(M) = 3 MEMBERS PERFORMING

(F) = TASK FACTOR

(D) = DICHOTOMOUS SET

(B) = 3 TIME SPENT BY MEMBERS PERFORMING

(-) = PROGRAM GENERATED VECTOR

NO	TYPE	VECTOR	/MEMBERS/		DESCRIPTION	FACTOR #
			MEAN	SD		
1	M	304 50	182		DAFSC 30450 AIRMEN	31
2	M	304 51	199		DAFSC 30451 AIRMEN	33
3	M	304 54	184		DAFSC 30454 AIRMEN	35
4	M	305 54	156		DAFSC 30554 AIRMEN	37
5	M	328 50	190		DAFSC 32850 AIRMEN	41
6	M	328 51	196		DAFSC 32851 AIRMEN	43
7	M	328 52	63		DAFSC 32852 AIRMEN	45
8	M	328 53	199		DAFSC 32853 AIRMEN	47
9	M	328 54	168		DAFSC 32854 AIRMEN	49
10	M	328 55	81		DAFSC 32855 AIRMEN	51

KESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSM TITLES

- A 29 A3-5 DO YOU MEASURE PLISTORS?
- A 30 A3-6 DO YOU USE OR REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASK YOU PERFORM?
- A 31 A3-7 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY CAREON?
- A 32 A3-8 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY FIXED WIRE?
- A 33 A3-9 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY SLIDE TAP?
- A 34 A3-10 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY RHEOSTAT?
- A 35 A3-11 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY POTENTIOMETER?
- A 36 A3-12 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY FIXED FILM?
- A 37 A3-13 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE?
- A 38 A3-14 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE?
- A 39 A3-15 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE?
- A 40 A3-16 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES?
- A 41 A3-17 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR SERIES RESISTIVE CIRCUITS?
- A 42 A3-18 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR SERIES RESISTIVE CIRCUITS?
- A 43 A3-19 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES RESISTIVE CIRCUITS?

304	304	304	305	328	328	328	328	328	328
50	51	54	54	50	51	52	53	54	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
85.2	86.9	79.3	80.1	77.4	82.1	50.8	68.3	65.5	84.0
22.0	37.2	28.8	16.7	25.8	31.6	22.2	22.6	19.6	21.0
55.5	65.8	67.4	53.2	54.2	58.7	14.3	41.7	40.5	60.5
65.9	77.9	72.8	62.2	64.2	67.3	33.3	57.3	48.2	77.8
52.7	79.4	54.3	46.2	47.9	45.4	11.1	39.2	29.9	72.8
62.7	80.4	69.6	64.7	68.9	73.0	34.9	65.8	45.8	79.0
82.4	92.0	81.0	84.0	76.3	83.2	58.7	81.4	69.0	88.9
33.0	43.7	33.7	25.6	22.1	32.1	4.8	21.6	19.6	33.3
44.1	88.9	79.9	73.7	72.1	80.1	22.2	69.8	57.1	82.7
75.3	85.4	74.5	66.0	60.0	71.9	19.0	56.3	49.4	77.8
31.9	40.2	29.9	28.2	27.4	26.5	7.9	20.6	19.6	40.7
87.4	91.0	82.1	85.9	80.5	86.2	73.0	83.4	69.6	91.4
67.6	80.4	71.2	53.8	58.9	62.8	31.3	50.8	47.6	60.5
65.4	78.9	67.4	50.0	51.1	60.2	34.9	48.7	39.3	51.9
62.1	79.9	67.9	55.1	53.2	61.2	36.5	55.3	45.2	61.7

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D	TSM	TITLES	304 50 (M)	304 51 (M)	304 54 (M)	305 54 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
A	44	A3-20 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	55.5	68.3	51.1	32.7	39.5	45.4	36.5	39.7	26.2	50.6
A	45	A3-21 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	67.0	79.4	69.6	51.3	57.9	62.2	34.9	49.2	47.6	61.7
A	46	A3-22 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	64.8	77.4	66.3	48.7	50.5	59.7	36.5	46.2	39.1	54.3
A	47	A3-23 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	65.9	77.9	65.2	53.2	50.5	58.7	33.3	50.8	42.9	58.0
A	48	A3-24 DO YOU USE OR REFER TO INDIVIDUAL BRANCH CURRENT PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	56.6	70.4	58.2	39.1	43.2	49.0	27.0	40.7	31.5	45.7
A	49	A3-25 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	56.0	67.3	49.5	28.2	36.3	44.9	33.3	34.2	23.8	46.9
A	50	A3-26 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	66.5	81.4	70.7	49.4	53.7	60.7	28.6	48.2	46.4	58.0
A	51	A3-27 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	64.3	78.9	66.3	46.6	46.8	59.2	30.2	45.2	36.3	50.6
A	52	A3-28 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	64.3	77.4	65.8	51.9	47.9	55.6	27.0	46.7	42.3	58.0
A	53	A3-29 DO YOU USE OR REFER TO INDIVIDUAL BRANCH CURRENT PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	55.5	67.8	56.0	37.8	42.6	47.4	23.8	40.7	33.3	45.7
A	54	A3-30 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	54.4	67.8	48.9	28.2	35.8	45.4	27.0	35.2	23.2	45.7
A	55	A3-31 DO YOU CALCULATE TOTAL RESISTANCE PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	56.6	76.4	62.0	44.2	46.3	55.1	23.8	42.2	39.3	55.6
A	56	A3-32 DO YOU CALCULATE TOTAL CURRENT PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	54.4	73.9	56.5	41.0	37.9	53.6	27.0	41.2	35.1	44.4
A	57	A3-33 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	58.0	71.4	57.6	44.2	39.5	50.5	22.2	43.2	35.1	53.1

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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Q TSK	TITLES										
		304	304	304	305	328	328	328	328	328	328
B 69	82-2 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM PEAK TO PEAK VOLTAGE IN YOUR PRESENT JOB?	83.5	93.0	84.2	79.5	72.6	82.7	74.6	82.4	73.2	93.0
B 70	82-3 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM AVERAGE VOLTAGE (DC) IN YOUR PRESENT JOB?	73.1	85.9	75.0	66.7	68.9	84.2	57.1	73.4	71.4	74.1
B 71	82-4 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM WAVE LENGTH IN YOUR PRESENT JOB?	60.4	83.4	57.6	59.0	60.0	68.9	69.8	57.3	53.0	70.4
B 72	82-5 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM FREQUENCY IN YOUR PRESENT JOB?	85.2	92.5	89.7	85.9	82.6	90.3	88.9	93.5	81.0	96.3
B 73	82-6 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM INSTANTANEOUS VALUE IN YOUR PRESENT JOB?	28.0	35.7	24.5	13.5	16.3	33.7	23.8	27.1	16.1	17.3
B 74	82-7 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM PHASE RELATIONSHIPS IN YOUR PRESENT JOB?	59.3	89.9	61.4	69.9	60.0	81.6	81.0	67.3	62.5	81.5
B 75	83-1 DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKES COILS IN YOUR PRESENT JOB? IF YES, GO TO ITEM C1-1; IF YES, CONTINUE.	53.8	71.4	66.3	44.9	60.0	66.3	15.9	41.7	38.1	65.4
B 76	83-2 DO YOU INSPECT INDUCTORS?	57.7	74.4	71.7	44.2	59.5	67.3	9.5	44.7	33.9	67.9
B 77	83-3 DO YOU CLEAN INDUCTORS?	42.9	63.3	64.7	31.4	54.7	58.7	6.3	31.7	23.2	49.4
B 78	83-4 DO YOU ADJUST INDUCTORS?	47.8	70.9	67.4	28.2	61.1	68.4	7.9	33.7	25.0	66.7
B 79	83-5 DO YOU MEASURE INDUCTORS?	44.0	52.8	50.5	32.7	45.3	50.0	9.5	30.7	23.8	50.6
B 80	83-6 DO YOU USE OR REFER TO INDUCTANCE?	59.3	76.9	70.1	38.5	57.9	66.3	11.1	42.7	29.8	67.9
B 81	83-7 DO YOU USE OR REFER TO HENRIES?	44.5	61.3	60.9	27.6	37.9	48.0	7.9	29.6	18.5	45.7
B 82	83-8 DO YOU USE OR REFER TO INDUCTIVE REACTANCE?	47.3	60.3	53.3	26.3	37.4	48.5	12.7	28.6	22.0	48.1
B 83	83-9 DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS?	2.2	12.1	14.7	3.2	5.3	9.7	.0	8.5	5.4	4.9
B 84	83-10 DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS?	6.0	13.6	16.8	9.0	5.8	7.7	1.6	7.5	6.0	3.7
B 85	83-11 DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS?	2.8	10.1	13.6	4.5	5.8	8.7	.0	5.0	4.8	7.4
B 86	83-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL?	17.0	25.6	16.8	9.6	15.8	17.9	7.9	9.0	9.5	12.3

MEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D YSM TITLES

B 87 B3-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE
INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS
SECTIONAL AREA OF THE CORE?

B 88 B3-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE
INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS
LENGTH?

B 89 B3-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE
INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE
PERMEABILITY OF THE CORE MATERIAL?

B 90 B3-16 DO YOU CALCULATE INDUCTANCE IN ELECTRICAL/ELECTRONIC
CIRCUITS?

B 91 B3-17 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT
LAGS VOLTAGE IN AC INDUCTOR CIRCUITS?

B 92 B3-18 DO YOU CALCULATE INDUCTIVE REACTANCE?

B 93 B3-19 DO YOU USE OR REFER TO THE GENERAL RULE THAT
INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO
FREQUENCY?

B 94 B3-20 DO YOU WORK WITH POWER INDUCTORS?

B 95 B3-21 DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS?

B 96 B3-22 DO YOU WORK WITH RADIO FREQUENCY INDUCTORS?

C CAPACITORS AND CAPACITIVE REACTANCE (C1), TRANSFORMERS (C2),
MAGNETISM (C3)

C 97 C1-1 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING
CAPACITORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM C2-1;

IF YES, CONTINUE.

C 98 C1-2 DO YOU INSPECT CAPACITORS?

C 99 C1-3 DO YOU CLEAN CAPACITORS?

304	304	304	304	304	304	304	304	304	304
50	51	54	54	50	51	52	53	54	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)

11.5	20.6	16.3	9.6	10.5	12.2	9.8	7.5	8.9	7.4
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12.1	22.6	14.7	7.1	11.6	14.3	3.2	9.0	7.7	12.3
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11.5	22.6	16.8	7.1	11.1	13.8	3.2	10.1	7.7	7.4
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14.3	30.2	20.7	10.3	15.8	18.4	9.5	11.1	6.5	16.0
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28.6	54.3	41.3	17.3	30.0	39.8	11.1	22.1	17.9	25.9
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17.6	34.2	25.0	14.1	17.9	21.4	6.3	12.6	6.5	16.0
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29.1	42.2	39.7	13.5	24.7	30.1	7.9	19.1	10.1	25.9
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34.1	53.8	44.0	30.1	36.8	44.9	11.1	22.1	21.4	44.4
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46.7	60.3	69.6	14.7	55.8	56.1	4.8	20.6	23.4	58.0
------	------	------	------	------	------	-----	------	------	------

51.6	70.9	71.2	7.1	57.9	65.8	12.7	40.2	17.3	64.2
------	------	------	-----	------	------	------	------	------	------

79.1	86.4	81.0	78.8	68.9	78.6	38.1	66.8	62.5	89.0
------	------	------	------	------	------	------	------	------	------

76.9	83.4	78.3	75.0	66.3	74.5	25.4	62.8	60.1	76.5
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66.5	72.4	67.4	53.8	57.9	65.8	9.5	44.2	43.5	58.0
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NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK TITLES

C 100 C1-4 DO YOU ADJUST CAPACITORS?

C 101 C1-5 DO YOU TEST CAPACITORS?

C 102 C1-6 DO YOU DISCHARGE CAPACITORS?

C 103 C1-7 DO YOU MEASURE CAPACITORS?

C 104 C1-8 DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE?

C 105 C1-9 DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTRONS IN

A DIELECTRIC?

C 106 C1-10 DO YOU USE OR REFER TO FARADS, MICROFARADS, OR

PICOFARADS?

C 107 C1-11 DO YOU USE OR REFER TO CAPACITANCE?

C 108 C1-12 DO YOU USE OR REFER TO DIELECTRIC CONSTANT?

C 109 C1-13 DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF

CAPACITORS?

C 110 C1-14 DO YOU USE OR REFER TO CAPACITIVE REACTANCE?

C 111 C1-15 DO YOU USE OR REFER TO CAPACITOR COLOR CODES?

C 112 C1-16 DO YOU WORK WITH CAPACITORS IN DC CIRCUITS?

C 113 C1-17 DO YOU WORK WITH CAPACITORS IN AC CIRCUITS?

C 114 C1-18 DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC

AND AC?

C 115 C1-19 DO YOU CALCULATE CAPACITANCE IN ELECTRICAL/ELECTRONIC

CIRCUITS?

C 116 C1-20 DO YOU USE OR REFER TO THE GENERAL RULE THAT

CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE

DIELECTRIC CONSTANT?

C 117 C1-21 DO YOU USE OR REFER TO THE GENERAL RULE THAT

CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO

THE DIELECTRIC THICKNESS?

C 118 C1-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT

DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO

507

304	304	304	305	328	328	328	328	328	328	328
50	51	54	54	50	51	52	53	54	55	(M)
72.0	82.4	75.0	40.4	65.8	69.4	12.7	39.7	37.5	70.4	
72.5	76.4	69.0	63.5	59.5	70.9	12.7	48.2	52.4	69.1	
72.6	81.4	72.8	64.1	51.6	74.0	25.4	49.2	44.0	56.8	
52.7	60.8	56.0	51.9	41.1	58.7	12.7	42.2	39.9	54.3	
15.9	24.6	20.7	9.0	16.8	15.3	9.5	21.1	10.1	13.6	
5.5	11.1	4.9	1.9	3.2	7.1	6.3	4.5	1.8	4.9	
74.7	86.9	78.8	69.9	61.6	69.9	23.6	58.3	46.4	70.4	
77.5	85.9	77.2	67.9	65.8	74.0	28.6	58.3	53.6	77.8	
26.9	28.1	26.1	12.2	17.9	24.5	11.1	16.1	10.1	14.8	
61.5	72.4	66.3	46.2	42.6	49.5	15.9	37.2	31.5	54.3	
46.7	59.3	45.7	31.4	34.7	42.3	15.9	30.7	19.6	44.4	
28.0	43.2	33.2	24.4	29.5	34.7	4.8	19.6	13.7	25.9	
82.4	87.9	80.4	80.1	67.4	78.6	41.3	67.3	65.5	85.2	
80.2	85.9	79.9	69.2	69.5	78.6	44.4	66.3	63.1	84.0	
79.1	84.4	81.0	66.0	69.5	77.6	39.7	63.8	64.9	82.7	
19.8	37.7	23.4	16.0	17.9	25.5	9.5	17.1	11.9	18.5	
14.8	24.6	23.9	9.6	14.2	18.9	4.8	11.6	6.0	13.6	
13.7	23.6	21.7	8.3	13.7	15.8	4.8	8.0	5.4	17.3	
45.1	62.3	49.5	28.8	32.6	44.4	12.7	33.2	32.1	45.7	

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TITLES

C 101 C2-16 DO YOU WORK WITH SATURABLE CORE TRANSFORMERS?

C 142 C2-17 DO YOU WORK WITH SENSING TRANSFORMERS?

C 103 C2-18 DO YOU WORK WITH CONTROL TRANSFORMERS?

C 144 C2-19 DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY

MEASURING RESISTANCE?

C 145 C2-20 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY

MEASURING RESISTANCE?

C 146 C2-21 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY

MEASURING OUTPUT VOLTAGES

C 197 C2-22 DO YOU MEASURE RESISTANCE OF TRANSFORMER WINDINGS TO

DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN

TURN RATIO?

C 140 C2-23 DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO

DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN

TURNING RATIO?

C 149 C2-24 DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS?

C 150 C2-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC

SYMBOLS FOR TRANSFORMERS?

C 151 C2-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR

TRANSFORMERS?

C 152 C2-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR

TRANSFORMERS?

C 153 C2-28 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR

TRANSFORMERS?

C 154 C2-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS

FOR TRANSFORMERS?

C 155 C2-30 DO YOU REFER TO VARIABLE TRANSFORMER SCHEMATIC

SYMBOLS?

C 156 C2-31 DO YOU REFER TO COMBINATIONS OF SCHEMATIC

SYMBOLS FOR TRANSFORMERS?

304	304	305	328	328	328	328	328
50	54	54	50	51	52	53	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
5.3	43.7	45.7	33.7	39.8	6.3	23.6	24.7
0.3	39.2	20.1	15.4	17.4	24.0	4.8	14.6
3.6	48.7	25.5	17.3	23.2	48.5	7.9	21.1
2.6	75.4	69.0	48.1	55.3	70.4	19.0	43.2
P.2	70.9	66.8	46.2	54.2	67.9	19.0	38.7
9.3	68.3	58.7	46.2	47.9	64.8	20.6	38.7
5.8	29.6	22.8	19.2	23.7	25.5	4.8	15.6
2.3	50.3	42.9	27.6	35.8	39.3	7.9	30.2
6.9	86.4	77.7	59.0	66.3	76.0	38.1	54.3
1.5	79.4	72.8	46.8	60.0	70.4	17.5	47.7
5.9	78.4	71.7	48.1	63.2	71.4	19.0	46.7
0.9	83.4	76.1	53.8	63.2	74.5	20.6	49.2
P.5	51.8	53.8	17.9	35.8	42.3	9.5	28.6
5.6	53.8	56.0	19.9	40.0	48.0	11.1	36.7
6.6	71.4	63.6	25.6	54.7	62.8	6.3	38.2
8.2	70.4	65.8	35.3	51.1	66.3	20.6	38.7

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D TSK	TITLES											
	304	304	304	305	328	328	328	328	328	328	328	328
C 157	C2-32 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS?											
	37.4	61.3	47.8	26.9	40.0	56.1	11.1	30.2	23.2	34.6		
C 158	C2-33 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH?											
	21.4	34.7	35.3	11.5	22.1	20.4	7.9	15.6	7.7	21.0		
C 159	C2-34 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO?											
	23.6	32.2	29.3	14.7	18.4	20.9	1.6	21.6	11.3	21.0		
C 160	C2-35 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS?											
	40.1	60.3	53.3	28.2	28.9	40.3	12.7	29.1	20.2	32.1		
C 161	C2-36 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS?											
	14.3	22.6	18.5	7.1	12.1	15.8	1.6	14.1	6.5	16.0		
C 162	C2-37 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS?											
	9.2	18.1	13.0	4.5	8.9	12.8	1.6	9.0	5.4	8.6		
C 163	C2-38 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS?											
	31.9	63.8	22.3	24.4	43.2	33.2	41.3	38.2	27.4	66.7		
C 164	C2-39 DO YOU INSPECT THREE PHASE TRANSFORMERS?											
	27.5	60.3	20.1	25.6	40.5	32.1	34.9	38.7	23.2	58.0		
C 165	C2-40 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS?											
	22.0	45.7	14.1	17.3	28.4	24.0	17.5	22.6	10.7	32.1		
C 166	C2-41 DO YOU ADJUST THREE PHASE TRANSFORMERS?											
	14.8	27.1	9.2	9.6	18.4	24.0	4.8	15.6	5.4	28.4		
C 167	C2-42 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS?											
	22.5	53.8	14.7	20.5	31.6	28.1	33.3	33.2	17.9	58.0		
C 168	C3-1 DO YOU USE OR REFER TO PERMANENT MAGNETS?											
	37.9	23.1	33.2	27.6	21.1	54.6	17.5	39.2	26.2	21.0		
C 169	C3-2 DO YOU USE OR REFER TO TEMPORARY MAGNETS?											
	20.3	24.1	29.3	23.1	15.3	29.1	9.5	15.6	17.9	21.0		
C 170	C3-3 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS?											
	8.8	10.1	19.0	17.9	2.6	10.2	4.8	10.6	10.1	3.7		
C 171	C3-4 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS?											
	9.3	11.1	14.7	12.8	3.2	7.7	4.8	9.5	8.3	3.7		
C 172	C3-5 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS?											
	12.6	13.1	19.6	17.3	4.7	12.8	4.8	13.6	8.9	4.9		
C 173	C3-6 DO YOU USE OR REFER TO RESIDUAL MAGNETISM?											
	12.6	13.6	26.1	29.5	6.8	16.3	6.3	10.6	11.9	4.9		
C 174	C3-7 DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX?											
	33.0	29.1	33.7	37.8	15.8	33.2	19.0	25.1	26.8	13.6		

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TITLES

C 175 C3-8 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM?
C 176 C3-9 DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM?
C 177 C3-10 DO YOU USE OR REFER TO MAGNETIC INDUCTION?
C 178 C3-11 DO YOU USE OR REFER TO FLUX DENSITY?
C 179 C3-12 DO YOU USE OR REFER TO SATURABLE REACTANCE?

RCL CIRCUITS (D1), TIME CONSTANTS (D2), FILTERS (D3)

0 180 D1-1 DO YOU WORK WITH RC, LR, OR RCL CIRCUITS IN YOUR PRESENT JOB? IF NO, GO TO ITEM D2-1; IF YES, CONTINUE.

0 181 D1-2 DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL CIRCUITS?

Q 102 D1-3 DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN WORKING WITH RCL CIRCUITS?

103 01-4 DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL CIRCUITS?

Q 189. DL-5 DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL CIRCUITS?

DO 105 D1-6 DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL CIRCUITS?

Q 106 DI-7 DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL CIRCUITS?

DL-0 DO YOU USE OR REFER TO TRUE POWER (P SUB T) WHEN WORKING WITH RCL CIRCUITS?

Q 100 D1-9 DO YOU USE OR REFER TO MAXIMUM POWER (P SUB M) WHEN WORKING WITH RCL CIRCUITS?

Q 109 DI-10 DO YOU USE OR REFER TO AVERAGE POWER (P SUB AVE) WHEN WORKING WITH RCL CIRCUITS?

[illegible]

61.5	77.4	65.8	38.5	47.4	68.9	46.0	43.7	41.1	69.1
14.3	48.2	15.8	7.1	5.8	11.7	3.2	9.0	25.0	8.6
12.6	24.6	10.3	5.1	4.7	9.7	4.8	7.0	13.7	7.4
11.5	30.2	11.4	9.6	12.1	20.4	30.2	9.5	29.8	7.4
9.3	26.1	8.7	5.8	7.9	18.9	33.3	8.0	28.6	6.2
9.9	25.6	7.1	3.8	8.4	11.2	17.5	6.0	24.4	6.2
47.8	72.4	52.7	19.9	47.9	60.7	36.5	38.7	29.8	63.0
29.7	48.2	28.2	7.7	22.6	38.3	19.0	23.6	14.3	24.7
31.3	53.8	34.2	4.3	27.4	47.4	22.2	29.1	17.3	30.9
33.5	62.8	33.7	8.3	28.9	58.2	47.6	30.2	18.5	24.7

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TITLES

0 205 DL-26 DO YOU USE OR REFER TO IMPEDANCE ANGLES FOR SERIES
3CL CIRCUITS?

D 206 DI-27 DO YOU USE OR REFER TO APPARENT POWER (P SUB A) FOR SERIES RCL CIRCUITS?

D 207 01-20 DO YOU USE OR REFER TO TRUE POWER (P SUB T) FOR
SERIES RCL CIRCUITS?

D. 200 D1-29 DO YOU USE OR REFER TO POWER FACTORS (PF) FOR SERIES
2CL CIRCUITS?

D 209 01-30 DO YOU USE OR REFER TO TOTAL CURRENT FOR PARALLEL RCL CIRCUITS?

D 210 01-31 DO YOU USE OR REFER TO IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS?

D 211 01-32 DO YOU USE THE ASSUMED VOLTAGE METHOD FOR DETERMINING TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS?

D 212 01-33 DO YOU USE OHM'S LAW FOR DETERMINING TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS?

0 213 01-34 00 YOU CHECK CAPACITORS USING OHMMETERS?

	DO YOU CHECK INDUCTORS USING OHMMETERS?
Q-215	Dl -36 DO YOU CHECK INDUCTORS USING SUBSTITUTION ?
A-	" " " "
Q-216	Dl -37 DO YOU CHECK INDUCTORS USING SUBSTITUTION ?
A-	" " " "

Q	DI	DO	YOU CHECK RESISTORS USING OHMMETERS?
Q 217	D1 -30	D0	YOU CHECK RESISTORS USING SUBSTITUTION?
Q 218	D1 -39	D0	YOU CHECK RESISTORS USING SUBSTITUTION?

(THETA) = 0, POWER FACTOR (PF) = 1, AND APPARENT POWER IS TRUE POWER AND CURRENT IS THE SAME AS THE CURRENT YOU USE ON REFERENCE TO THE RULE THAT PHASE

0 220 01-41 00 YOU USE OR REFER TO RESONANT FREQUENCIES FOR RESONANT CIRCUITS?
IP SUB A7 = TRUE POWER IP SUB 17 FOR RESONANT CIRCUITS

D 221 D1-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT
CIRCUMST?

FREQUENCY FOR SERIES RCL CIRCUITS?

1. *Phragmites australis* (Cav.) Trin. ex Steud.

304	304	304	305	328	328	328	328	328	328
50	51	54	54	50	51	52	53	54	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
111.0	22.1	8.7	3.2	8.9	10.2	3.2	7.0	6.0	6.2
12.1	17.1	14.1	5.8	10.5	14.8	4.8	7.5	5.4	8.6
22.0	33.2	20.7	5.8	12.6	23.0	9.5	12.1	6.5	13.6
14.3	23.1	16.3	5.1	10.5	19.4	6.3	11.1	6.0	8.6
33.5	48.7	27.2	13.5	20.5	32.1	9.5	16.1	12.5	25.9
10.4	18.6	7.6	1.9	9.5	8.7	6.3	8.0	4.8	8.6
11.0	25.1	14.1	6.4	8.9	9.7	4.8	9.0	4.2	8.6
32.5	55.8	33.2	17.9	22.6	31.1	12.7	20.6	16.1	30.9
54.9	69.8	65.2	38.5	46.8	65.8	19.0	37.7	36.9	59.3
32.5	47.7	44.0	27.6	40.0	55.1	3.2	23.1	23.8	49.4
50.5	67.3	58.2	28.8	44.7	59.7	15.9	32.2	26.8	55.6
34.1	42.7	40.8	21.8	37.9	52.0	1.6	21.1	20.2	50.6
64.3	78.4	67.9	39.7	53.2	69.4	31.7	45.2	41.1	66.7
33.0	42.7	36.4	23.7	35.3	46.9	4.8	23.1	22.6	44.4
18.6	8.7	1.9	5.3	7.7	3.2	5.5	4.2	2.5	

	65.3	51.6	14.1	37.4	50.5	19.0	30.7	20.2	45.7
47.8									
34.6	57.8	42.9	9.0	32.6	16.7	11.1	21.1	16.1	28.9

[illegible]

KESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLES	304 (M)	305 (M)	306 (M)	307 (M)	308 (M)	309 (M)	310 (M)	311 (M)	312 (M)	313 (M)	314 (M)	315 (M)	316 (M)	317 (M)	318 (M)	319 (M)	320 (M)
D 233	D3-1 DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM E1-1; IF YES, CONTINUE.	69.2	83.9	75.5	44.2	68.9	71.9	73.0	61.3	47.0	79.0							
D 234	D3-2 DO YOU INSPECT FILTER CIRCUITS?	62.1	71.4	70.7	40.4	61.6	68.9	33.3	50.8	39.1	67.9							
D 235	D3-3 DO YOU CLEAN FILTER CIRCUITS?	56.0	65.3	60.9	32.1	51.1	56.6	14.3	33.2	25.0	51.9							
D 236	D3-4 DO YOU ALIGN OR ADJUST FILTER CIRCUITS?	55.5	68.8	65.2	23.7	54.7	60.2	11.1	34.7	24.4	58.0							
D 237	D3-5 DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL?	62.1	67.8	67.9	34.0	58.9	65.8	42.9	45.2	33.3	69.1							
D 238	D3-6 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF FILTER CIRCUITS?	55.5	65.3	64.1	35.3	55.3	60.2	22.2	37.2	28.0	55.6							
D 239	D3-7 DO YOU WORK WITH LOW PASS FILTERS?	68.7	83.9	71.2	32.7	61.6	70.4	42.9	51.8	36.9	72.8							
D 240	D3-8 DO YOU WORK WITH HIGH PASS FILTERS?	68.1	82.4	67.9	27.6	57.9	69.9	42.9	50.3	36.3	71.6							
D 241	D3-9 DO YOU WORK WITH BANDPASS FILTERS?	69.8	86.9	75.5	17.9	66.3	71.4	65.1	58.8	32.1	60.2							
D 242	D3-10 DO YOU WORK WITH BAND-REJECT FILTERS?	62.6	73.4	57.6	12.8	45.8	58.2	34.9	47.2	19.6	63.0							
D 243	D3-11 DO YOU WORK WITH FILTERS BUT DON'T REMEMBER WHICH TYPE?	7.7	10.6	11.4	10.3	15.8	16.8	6.3	6.5	10.1	22.2							
D 244	D3-12 DO YOU WORK WITH L-SECTION FILTER CONFIGURATIONS?	61.5	67.8	64.1	21.2	51.1	61.7	12.7	37.7	21.4	53.1							
D 245	D3-13 DO YOU WORK WITH T-SECTION FILTER CONFIGURATIONS?	61.5	71.9	60.9	21.2	49.5	59.7	7.9	36.2	21.4	51.9							
D 246	D3-14 DO YOU WORK WITH PI-SECTION FILTER CONFIGURATIONS?	59.3	65.8	61.4	16.0	51.1	61.7	6.3	37.7	18.5	43.2							
D 247	D3-15 DO YOU WORK WITH YTTRIUM IRON GARNET (YIG) FILTERS?	3.3	4.5	2.7	.6	6.8	3.1	1.6	39.7	1.8	9.9							
D 248	D3-16 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC FILTERS?	12.6	24.6	15.2	8.3	11.1	14.8	3.2	8.0	1.8	8.6							

E COUPLING (E1), SOLDERING OR SOLDERLESS CONNECTIONS (E2), RELAYS (E3)

E 249 E1-1 DO YOU WORK WITH COUPLING DEVICES OR CIRCUITRY IN YOUR PRESENT JOB? IF NO, GO TO ITEM E2-1; IF YES, CONTINUE.

50.9	80.9	70.1	29.5	64.7	68.9	34.9	43.2	30.4	67.9
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KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSM	TITLES												
		304	304	304	305	328	328	328	328	328	328	328	328
		50	51	54	54	50	51	52	53	54	55		
		(M)	(P)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)		
E 250	E1-2 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC COUPLING?	50.0	79.4	67.4	22.4	53.7	66.3	20.6	39.7	21.4	56.8		
E 251	E1-3 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH IMPEDANCE COUPLING (MATCHING)?	60.4	81.4	70.7	24.4	62.6	67.3	19.0	41.2	21.4	63.0		
E 252	E1-4 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH OPTICAL COUPLING?	7.1	8.0	8.2	7.7	5.3	13.3	17.5	2.5	1.8	6.2		
E 253	E1-5 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH TRANSFORMER COUPLING?	54.9	79.4	66.3	21.8	53.2	65.3	19.0	39.7	23.2	65.4		
E 254	E1-6 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM RC COUPLING?	44.0	70.4	64.7	23.1	52.1	64.1	17.5	33.7	18.5	55.6		
E 255	E1-7 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM IMPEDANCE COUPLING?	53.8	70.4	68.5	21.8	58.4	62.2	15.9	34.2	19.6	61.7		
E 256	E1-8 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM TRANSFORMER COUPLING?	49.5	69.3	63.0	19.9	51.6	63.8	15.9	36.7	22.0	60.5		
E 257	E1-9 DO YOU WORK WITH DIRECT COUPLED CIRCUITS?	56.0	75.9	67.4	21.8	56.8	67.1	22.2	38.2	25.0	61.7		
E 258	E1-10 DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED CIRCUITS?	45.6	76.9	65.8	19.9	52.6	63.3	12.7	35.2	22.0	54.3		
E 259	E1-11 DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED CIRCUITS?	43.4	71.9	64.1	17.3	53.2	60.2	15.9	32.7	20.2	55.6		
E 260	E1-12 DO YOU WORK WITH OPTICAL COUPLING?	7.7	8.5	7.1	7.1	4.2	11.7	15.9	2.0	3.0	6.2		
E 261	E1-13 DO YOU WORK WITH OPTICAL COUPLING CIRCUITS?	6.6	8.0	6.5	6.4	3.7	12.2	12.7	3.0	2.1	6.2		
E 262	E1-14 DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS?	54.4	79.4	64.7	20.5	53.7	65.3	19.0	38.7	23.8	65.4		
E 263	E2-1 IN YOUR PRESENT JOB, DO YOU CONNECT ELECTRONIC CIRCUITS USING SOLDERLESS CONNECTIONS OR SOLDERING TECHNIQUES? IF NO, GO TO ITEM E3-1; IF YES, CONTINUE.	81.9	82.4	81.0	76.9	88.4	89.3	47.6	81.9	75.0	87.7		
E 264	E2-2 DO YOU SOLDER CONNECTIONS?	84.1	81.9	81.0	80.1	91.6	91.8	47.6	85.4	75.0	85.2		
E 265	E2-3 DO YOU DESOLDER CONNECTIONS?	84.1	81.9	81.0	80.1	90.0	91.3	46.0	84.9	74.4	85.2		

D	TASK	TITLES	304 50 (M)	304 51 (P)	304 (M)	305 54 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
E 266	E2-4	DO YOU PERFORM HIGH RELIABILITY SOLDERING?	57.1	61.3	63.0	61.5	58.4	56.6	25.4	56.3	53.0	58.0
E 267	E2-5	DO YOU INSPECT SOLDERED CONNECTIONS?	83.0	81.9	79.9	80.8	89.5	80.8	44.4	85.9	71.4	85.2
E 268	E2-6	DO YOU CLEAN OR TIN CONNECTIONS?	81.9	80.9	81.0	78.2	89.5	89.3	42.9	84.4	71.4	85.2
E 269	E2-7	DO YOU MAKE HARDWARE CONNECTIONS?	79.7	79.4	78.3	74.4	85.8	84.7	44.4	75.9	68.5	81.5
E 270	E2-8	DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS?	79.1	76.9	77.2	71.8	64.7	70.4	77.19.0	63.3	54.2	77.8
E 271	E2-9	DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS?	81.3	78.9	78.8	74.4	73.7	80.1	22.2	66.3	57.1	79.0
E 272	E2-10	DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS?	80.2	77.4	77.2	73.7	67.9	77.0	19.0	66.3	54.8	76.5
E 273	E2-11	DO YOU SOLDER ACTIVE COMPONENTS, SUCH AS INTEGRATED CIRCUITS?	58.2	55.3	57.6	48.7	35.3	55.6	15.9	38.2	26.2	58.0
E 274	E2-12	DO YOU PERFORM WIRE WRAPPING IN LIEU OF SOLDERING?	42.9	28.6	30.4	40.4	23.2	27.0	42.9	23.6	23.2	30.9
E 275	E2-13	DO YOU PERFORM CRIMPING IN LIEU OF SOLDERING?	64.8	68.3	56.5	59.6	80.5	81.1	39.7	74.4	64.3	71.6
E 276	E2-14	DO YOU PERFORM WIRE CONNECTIONS USING A TINA PUNCH-ON TOOL IN LIEU OF SOLDERING?	24.7	11.1	21.7	8.3	11.1	8.2	3.2	12.6	13.1	13.6
E 277	E3-1	DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB? IF NO, GO TO ITEM F1-1; IF YES, CONTINUE.	75.3	83.4	77.2	67.9	83.7	86.2	54.0	71.9	77.4	85.2
E 278	E3-2	DO YOU ADJUST RELAYS?	48.4	54.3	50.0	39.1	38.9	49.5	7.9	26.6	17.9	63.0
E 279	E3-3	DO YOU CLEAN RELAYS?	63.7	71.4	70.7	57.1	60.0	69.9	17.5	47.2	33.9	61.7
E 280	E3-4	DO YOU INSPECT RELAYS?	69.2	76.9	77.7	64.1	71.6	77.6	36.5	58.8	59.3	77.8
E 281	E3-5	DO YOU TROUBLESHOOT RELAYS?	68.7	75.9	71.2	60.9	80.5	85.7	49.2	63.3	75.0	87.7
E 282	E3-6	DO YOU MONITOR BIAS OUTPUT ON RELAYS?	29.7	29.1	28.3	19.9	23.2	24.0	11.1	18.1	10.7	27.2
E 283	E3-7	DO YOU REMOVE OR REPLACE RELAYS?	73.1	73.4	75.5	66.7	84.2	86.7	41.3	68.3	76.8	85.2
E 284	E3-8	DO YOU PERFORM TASKS ON CONTACTS OF RELAYS?	55.5	70.4	67.9	51.3	52.1	59.7	14.3	30.7	23.8	45.7
E 285	E3-9	DO YOU PERFORM TASKS ON COILS OF RELAYS?	14.3	20.1	20.1	18.6	16.8	18.4	3.2	7.5	4.8	16.0
E 286	E3-10	DO YOU PERFORM TASKS ON ARMATURES OF RELAYS?	20.9	31.2	31.0	21.8	22.1	23.0	4.8	10.6	7.7	19.8
E 287	E3-11	DO YOU PERFORM TASKS ON SPRINGS OF RELAYS?	24.7	36.7	44.6	35.9	32.1	34.7	4.8	19.6	10.1	27.2
E 288	E3-12	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAYS?	27.5	37.2	47.8	35.3	28.4	32.7	4.8	16.6	10.7	22.2
E 289	E3-13	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAYS?	67.6	78.9	73.4	55.4	76.3	77.6	50.8	67.3	66.7	75.3

KESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK TITLES

E 290	E3-14	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST)?	67.0	78.9	71.7	55.1	75.8	77.0	47.6	67.3	67.3	75.3
E 291	E3-15	DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT)?	64.8	75.9	67.9	51.3	73.7	75.0	49.2	65.8	63.1	75.3
E 292	E3-16	DO YOU USE OR REFER TO DOUBLE POLE, DOUBLE THROW (DPDT)?	62.6	74.4	68.5	49.4	72.6	74.0	47.6	66.3	60.1	76.5
E 293	E3-17	DO YOU USE OR REFER TO OTHER RELAY SYMBOLS?	56.6	71.9	65.8	49.4	64.2	70.9	41.3	57.3	53.0	72.8
E 294	E3-18	DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE?	53.8	69.8	63.6	48.7	62.6	73.0	27.0	49.7	49.4	69.1

F MICROPHONES AND SENSING DEVICES (F1), SPEAKERS (F2), OSCILLOSCOPES (F3)

F 295	F1-1	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH MICROPHONES OR OTHER SENSING DEVICES SUCH AS TRANSDUCERS? IF NO, GO TO ITEM F2-1; IF YES, CONTINUE.	33.0	26.1	70.1	11.5	86.8	23.5	25.4	14.6	17.9	63.0
F 296	F1-2	DO YOU CLEAN MICROPHONES?	25.3	25.6	67.9	5.1	78.4	18.9	9.5	10.6	3.2	59.3
F 297	F1-3	DO YOU OPERATE MICROPHONES?	23.1	20.6	57.6	4.5	62.6	15.8	6.3	8.0	2.4	39.5
F 298	F1-4	DO YOU TROUBLESHOOT MICROPHONES WIRE CONNECTIONS?	24.2	26.6	66.8	4.5	88.9	24.5	19.0	11.1	7.1	61.7
F 299	F1-5	DO YOU TROUBLESHOOT MICROPHONE COMPONENT PARTS OTHER THAN WIRE CONNECTIONS?	23.6	23.1	63.6	5.1	85.3	20.9	3.2	10.1	3.6	61.7
F 300	F1-6	DO YOU REMOVE AND REPLACE COMPLETE MICROPHONES?	16.5	11.6	46.2	3.2	42.1	9.7	1.6	4.0	1.8	44.4
F 301	F1-7	DO YOU REMOVE OR REPLACE MICROPHONE COMPONENT PARTS?	22.0	23.1	64.7	5.1	85.3	19.4	4.8	9.5	3.0	59.3
F 302	F1-8	DO YOU PERFORM TASKS ON CARBON MICROPHONES?	15.4	16.1	47.8	3.2	37.4	9.2	1.6	5.5	1.8	40.7
F 303	F1-9	DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES?	15.9	18.1	65.8	3.2	69.5	10.2	3.2	5.5	1.2	45.7
F 304	F1-10	DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES?	2.2	4.0	17.4	.6	11.1	1.5	1.6	2.0	1.2	13.6
F 305	F1-11	DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES?	7.7	4.5	12.5	1.9	14.7	3.6	.0	2.0	1.2	12.3
F 306	F1-12	DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES?	12.6	11.6	64.1	3.2	77.4	12.2	3.2	5.5	.6	51.9
F 307	F1-13	DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES?	2.2	1.0	4.3	.0	6.3	1.0	.0	.0	.6	3.7

O TSN TITLES

F 330 F3-7 DO YOU USE OSCILLOSCOPES TO OBSERVE LISSAJOUS PATTERNS?
 F 331 F3-8 DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE UTILIZING ATTENUATOR PROBES.
 F 332 F3-9 DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME MEASUREMENTS USING DELAY TIME MULTIPLIER?
 F 333 F3-10 DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGES?
 F 334 F3-11 DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGES?
 F 335 F3-12 DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROL?
 F 336 F3-13 DO YOU USE OSCILLOSCOPES TO OBSERVE DATA PATTERNS?
 F 337 F3-14 DO YOU USE OSCILLOSCOPES TO MEASURE RIPPLE VOLTAGES?
 F 338 F3-15 DO YOU USE OSCILLOSCOPES TO MEASURE PHASE JITTER?
 F 339 F3-16 DO YOU USE OSCILLOSCOPES TO DISPLAY SWEEP GENERATOR PATTERNS?
 F 340 F3-17 DO YOU USE OSCILLOSCOPES TO OBSERVE PHASE RELATIONSHIPS?
 F 341 F3-18 DO YOU USE OSCILLOSCOPES TO OBSERVE SAMPLING DISPLAYS?

6 SEMICONDUCTOR DIODES (61), TRANSISTORS (62), TRANSISTOR AMPLIFIERS (63)

6 342 61-1 DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT JOB? IF NO, GO TO ITEM 62-1; IF YES, CONTINUE.
 6 343 61-2 DO YOU INSPECT DIODES?
 6 344 61-3 DO YOU CHECK DIODES?

304	304	304	305	328	328	328	328	328	328	328	328
50	51	54	54	50	51	52	53	54	55	55	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
35.7	32.2	37.5	28.8	28.9	37.8	12.7	22.6	26.8	74.1		
68.1	84.9	71.7	69.2	65.8	81.1	55.6	76.9	52.4	76.5		
20.1	74.9	33.2	66.7	27.4	77.6	41.3	39.7	29.2	53.1		
77.5	88.4	74.5	83.3	68.9	82.1	58.7	84.4	70.8	77.8		
78.6	89.4	75.5	89.7	64.2	82.1	54.0	86.9	70.2	80.2		
58.2	77.4	50.5	54.5	44.7	68.4	27.0	54.8	44.6	67.9		
58.8	45.7	41.3	80.1	39.5	45.4	42.9	47.7	40.5	69.1		
61.5	79.9	61.4	75.6	50.5	70.4	25.4	63.3	47.6	65.4		
36.3	67.8	22.3	35.3	18.4	50.0	25.4	26.6	20.8	29.6		
47.3	72.9	34.8	54.5	34.7	73.5	34.9	54.8	36.9	63.0		
51.6	79.4	50.0	66.7	51.1	78.6	42.9	55.3	53.0	55.6		
49.5	75.9	41.8	47.4	41.6	58.7	36.5	51.3	38.1	61.7		
80.2	85.4	79.9	80.1	63.2	76.0	31.7	58.8	56.5	74.1		
73.1	77.4	77.7	76.3	61.6	73.0	20.6	54.3	50.0	69.1		
74.2	75.9	76.6	77.6	63.2	74.0	20.6	53.8	53.6	74.1		

1 0 TSK TITLES

6 345 61-4 DO YOU USE ENERGY LEVEL DIAGRAMS IN YOUR WORK WITH DIODES?

6 346 61-5 DO YOU USE PN JUNCTION DIODE CHARACTERISTIC CURVES, TOGETHER WITH VALUES OF FORWARD AND REVERSE BIAS VOLTAGE, TO COMPUTE FORWARD OR REVERSE BIAS RESISTANCE?

6 347 61-6 DO YOU COMPUTE FORWARD OR REVERSE BIAS RESISTANCE FOR DIODES?

6 348 61-7 DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES?

6 349 61-8 DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONIC COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE?

6 350 61-9 DO YOU REFER TO OR DO YOU DETERMINE THE GENERAL EFFECTS OF DOPING ON CURRENT FLOW?

6 351 61-10 DO YOU MEASURE FORWARD BIAS RESISTANCE?

6 352 61-11 DO YOU MEASURE REVERSE BIAS RESISTANCE?

6 353 61-12 DO YOU READ DIODE COLOR CODING?

6 354 61-13 DO YOU READ DIODE NUMBERING SYSTEM, SUCH AS IN 5387

6 355 61-14 DO YOU USE THE SYMBOL ON DIODE WHICH INDICATES THE CATHODE END?

6 356 61-15 DO YOU DETERMINE DIRECTION OF CURRENT THROUGH A DIODE?

6 357 61-16 DO YOU NEED TO KNOW WHICH MATERIALS ARE USED IN THE CONSTRUCTION OF DIODES SUCH AS GERMANIUM OR SILICON?

6 358 61-17 DO YOU NEED TO KNOW THAT SEMICONDUCTORS HAVE NEGATIVE TEMPERATURE COEFFICIENTS OR RESISTANCE (AS TEMPERATURE INCREASES RESISTANCE DECREASES)?

6 359 61-18 DO YOU USE OR REFER TO PN JUNCTION DIODE CHARACTERISTIC CURVES (PERHAPS YOU DO THIS TO IDENTIFY POINTS OF STRUCTURAL BREAKDOWN OR OPERATING REGIONS)?

304	304	304	305	320	320	320	320	320	320
50	51	54	54	50	51	52	53	54	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
8.2	11.1	3.0	7.1	9.5	6.6	6.3	8.0	3.6	11.1
19.2	26.1	15.0	13.5	11.6	14.8	6.3	11.6	6.0	16.0
25.3	31.7	23.9	28.0	23.2	30.1	6.3	16.6	11.3	24.7
59.3	70.9	57.6	59.0	43.2	62.8	23.8	42.2	31.5	53.1
69.2	79.9	72.3	73.7	58.4	69.9	15.9	51.8	47.0	65.4
20.3	19.6	14.1	9.0	8.9	12.2	6.3	11.1	6.0	13.6
51.1	56.8	59.2	62.2	47.9	61.7	15.9	36.2	39.9	55.6
51.1	56.8	59.8	62.8	47.4	62.2	17.5	36.2	39.3	54.3
22.5	27.1	26.6	22.4	25.3	26.5	4.8	19.6	16.1	27.2
58.2	65.3	66.3	59.6	51.1	63.8	7.9	41.7	33.3	63.0
75.3	81.9	79.9	77.6	62.6	74.0	22.2	57.8	53.6	78.1
74.2	80.9	77.2	76.3	60.0	71.9	25.4	55.3	48.8	63.0
17.6	23.1	19.0	11.5	10.5	16.3	4.8	14.1	6.5	12.3
34.6	49.7	32.6	26.9	26.3	38.8	9.5	27.6	19.0	38.6
21.4	29.6	21.7	17.3	14.7	20.4	7.9	17.1	4.8	14.8

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TITLES

6 360 61-19 DO YOU DETERMINE WHETHER PN JUNCTION DIODES ARE FORWARD BIASED OR REVERSE BIASED WHEN YOU READ OR INTERPRET CIRCUIT DIAGRAMS?

6 361 G1-20 DO YOU NEED AN UNDERSTANDING OF VALENCE BAND IN SEMICONDUCTOR MATERIALS?

6 362 61-21 DO YOU NEED AN UNDERSTANDING OF FORBIDDEN BAND IN
SEMICONDUCTOR MATERIALS?

6 363 61-22 DO YOU NEED AN UNDERSTANDING OF CONDUCTION BAND IN SEMICONDUCTOR MATERIALS?

6 364 G1-23 DO YOU NEED AN UNDERSTANDING OF COVALENT BONDING IN SEMICONDUCTOR MATERIALS?

6 365 61-24 DO YOU NEED AN UNDERSTANDING OF ELECTRON-HOLE PAIR
CREATED IN SEMICONDUCTORS?

6 366 61-25 DO YOU NEED AN UNDERSTANDING OF ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS?

6 367 61-26 DO YOU NEED AN UNDERSTANDING OF DONOR IMPURITY IN SEMICONDUCTORS?

6 6 368 61-27 DO YOU NEED AN UNDERSTANDING OF ACCEPTOR IMPURITY IN SEMICONDUCTORS?

6 369 61-28 DO YOU NEED AN UNDERSTANDING OF P-TYPE SEMICONDUCTOR MATERIAL?

6 370 61-29 DO YOU NEED AN UNDERSTANDING OF N-TYPE SEMICONDUCTOR MATERIAL?

6 371 61-30 DO YOU NEED AN UNDERSTANDING OF MAJORITY CARRIERS IN
SEMICONDUCTORS?

6 372 61-31 DO YOU NEED AN UNDERSTANDING OF MINORITY CARRIERS IN SEMICONDUCTORS?

G 373 61-32 DO YOU NEED AN UNDERSTANDING OF JUNCTION
RECOMBINATION IN SEMICONDUCTORS?

G 374 61-33 DO YOU NEED AN UNDERSTANDING OF DEPLETION REGION IN SEMICONDUCTORS?

304	304	305	328	328	328	328
(M)	(M)	(M)	(M)	(M)	(M)	(M)
50	54	54	50	51	52	53
(M)	(M)	(M)	(M)	(M)	(M)	(M)
328	328	328	328	328	328	328
(M)	(M)	(M)	(M)	(M)	(M)	(M)
55	54	55	54	53	54	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
59.3	69.8	69.6	53.2	41.1	55.1	12.7	30.7	20.0	40.1																																																																																																						

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
21.4	21.1	16.3	7.7	8.4	13.3	1.6	16.6	6.5	13.6		

20.3	19.6	12.0	6.4	6.3	10.2	1.6	12.6	6.5	12.3
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23.1	24.1	18.5	10.3	9.5	16.3	3.2	14.6	7.7	13.6
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Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1950	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100

[illegible]

20.3	22.1	19.6	7.7	9.5	13.8	3.2	15.6	6.5	14.8
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19.6	20.6	19.0	8.3	9.5	13.3	3.2	15.1	5.4	14.6
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42.3	54.8	46.7	35.9	31.6	39.8	7.9	31.7	25.0	33.3
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[illegible]

	29.6	29.1	26.6	17.3	13.7	21.4	9.8	19.6	10.7	16.0
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24.2	25.6	21.2	9.6	8.4	17.3	6.3	14.1	7.7	17.3
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22.0	27.1	32.1	17.3	12.1	20.9	6.3	23.6	0.9	22.2
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TITLES

1-34 DO YOU NEED AN UNDERSTANDING OF RELATIONSHIP BETWEEN
3ARRIER WIDTH AND DIFFERENCE OF POTENTIAL?

1-35 DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES?

1-36 DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS?

1-37 DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION?

1-38 DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS?

1-39 DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT
DIODE RATINGS?

1-40 DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE RATINGS?

1-41 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS?

40, GO TO ITEM G3-1; IF YES, CONTINUE.

22-2 DO YOU INSPECT TRANSISTORS?
22-3 DO YOU CHECK TRANSISTORS?

2-4 DO YOU NEED AN UNDERSTANDING
FORWARD AND REVERSE RESISTANCE

2-5 DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS?

2-6 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC) RESISTANCE MEASUREMENTS?

22-7 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION?

2-8 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION?

304	304	304	305	320	320	320	320	320	320
50	51	54	54	50	51	52	53	54	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
229.1	29.1	20.3	12.0	12.6	10.4	6.3	21.6	6.5	10.5
43.4	40.7	52.7	39.7	46.3	65.3	6.3	29.1	23.0	51.9
10.4	11.1	10.3	3.0	6.0	9.2	1.6	5.5	2.4	0.6
39.0	41.2	45.7	41.0	32.6	37.8	9.8	21.1	13.7	37.0
21.4	29.1	29.9	17.9	10.4	17.3	3.2	16.6	10.7	14.0
17.6	21.6	23.9	14.7	13.2	13.3	4.0	14.1	10.7	9.9
21.4	26.6	27.2	10.6	15.0	15.8	4.8	15.1	10.1	14.0
27.6	31.7	30.6	22.4	19.5	23.0	4.0	25.1	12.5	22.2
79.1	85.4	70.0	80.1	65.3	74.5	39.7	31.0	49.4	77.0
75.8	75.4	70.3	71.0	63.7	71.4	25.4	56.3	42.9	71.6
73.1	74.9	76.6	72.4	63.2	72.4	20.6	55.3	37.5	72.0
66.5	70.4	73.4	66.0	54.7	70.9	22.2	50.8	35.1	61.7
65.9	74.4	72.0	69.9	54.2	69.9	20.6	49.7	31.5	67.9
67.6	73.9	72.0	69.2	53.2	69.9	20.6	50.3	31.5	67.9
35.7	44.2	43.5	37.2	26.0	32.1	12.7	35.7	17.9	37.0
34.3	44.2	42.9	35.9	26.0	32.1	12.7	36.7	16.1	37.0

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D TSM

STILL

6 Q05 62-23 DO YOU USE OR REFER TO THE POWER GAIN FOR SPECIFIC TRANSISTORS BY MULTIPLYING THE CURRENT GAIN TIMES THE VOLTAGE GAIN ($AP = AI \times AV$)?

6 406 62-24 DO YOU PERFORM TRANSISTOR MATCHING THROUGH THE USE OF CURVE TRACING?

6 007 63-1 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 14-1; IF YES, CONTINUE

G 400 63-2 DO YOU INSPECT TRANSISTOR AMPLIFIERS?

6 409 61-1 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS?

6 410 63-4 00 YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL?

6 Q10 63-4 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT?

6 114 9 63-5 00 YOU SHOULD AMPLIFIER COMPONENTS?
6 112 63-4 00 YOU REMOVE OR REPLACE THE COMBIEYE AMPLIFIER?

6 612 63-6 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER?
C 613 63-7 DO YOU REMOVE OR REPLACE AMPLIFIER CIRCUIY COMPONENTS?

6 913 63-7 DO YOU REMOVE OR REPLACE AMPLIFIER CIRCUIT COMPONENTS
6 914 63-8 DO YOU USE OR REFER TO THE CHANGE IN COLLECTOR CURRENT
6 915 63-9 DO YOU CHARGE THE BATTERY

RESULTS FROM A CHANGE IN BASE CURRENT CONCERNING
TRANSISTOR AMPLIFIERS?

TRANSISTION AMPLIFIER
E 015 63-9 DO YOU USE OR REFER TO THE CALCULATIONS NECESSARY

MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH

RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT CONCERNING

304	304	304	305	328	328	328	328	328	328
50	51	54	54	50	51	52	53	54	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
13.7	15.1	16.3	7.7	8.4	10.7	3.2	10.6	3.6	6.2
6.6	9.0	10.3	8.3	5.3	4.6	3.2	4.0	3.6	9.9
63.7	73.9	72.3	34.6	60.0	60.2	27.0	45.7	35.1	79.0
59.3	67.8	68.5	32.1	58.4	56.6	19.0	42.2	28.6	67.9
54.4	60.8	63.0	24.4	46.8	52.6	14.3	36.2	18.5	65.4
59.9	68.8	68.5	32.1	53.7	56.6	14.3	38.7	27.4	70.4
54.4	61.8	66.3	26.9	49.5	58.6	12.7	33.2	18.5	61.7
59.9	63.3	67.9	31.4	61.1	58.7	17.5	39.2	31.0	71.6
54.4	57.8	65.8	27.6	48.8	53.1	7.9	30.2	19.0	60.5
33.5	44.2	35.9	17.9	25.8	30.1	15.9	22.6	13.1	37.0
20.3	19.6	16.8	10.3	12.6	14.3	9.5	11.6	4.2	19.8
34.6	42.2	37.0	19.2	25.8	28.6	15.9	22.1	13.1	30.7
40.7	48.2	38.0	20.5	29.5	28.6	14.3	24.1	11.9	39.5
19.2	21.6	18.5	13.5	16.8	15.3	9.5	10.6	6.5	21.0

D	ISN	TITLE	304 50 (M)	304 51 (M)	304 54 (M)	305 54 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
6	419	63-11 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)?	6.6	6.0	4.9	2.6	5.3	4.1	3.2	4.0	1.8	6.2
6	420	63-14 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR?	21.4	38.2	22.8	12.2	11.6	21.9	3.2	14.1	4.8	7.4
6	421	63-15 DO YOU MEASURE VOLTAGE GAIN CONCERNING TRANSISTOR AMPLIFIERS?	40.9	49.2	50.5	20.5	41.1	44.9	12.7	29.6	17.9	53.1
6	422	63-16 DO YOU MEASURE CURRENT GAIN CONCERNING TRANSISTOR AMPLIFIERS?	35.2	34.7	36.4	13.5	32.1	34.2	12.7	22.6	13.1	43.2
6	423	63-17 DO YOU MEASURE POWER GAIN CONCERNING TRANSISTOR AMPLIFIERS?	42.9	41.2	46.2	12.8	35.3	38.3	19.0	25.6	11.9	51.9
6	424	63-18 DO YOU USE OR REFER TO THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS BY DIVIDING THE CHANGE IN BASE - EMITTER VOLTAGE INTO THE CHANGE OF THE BASE COLLECTOR VOLTAGE?	20.3	23.1	15.2	9.0	12.1	14.3	4.8	9.5	4.0	16.0
6	425	63-19 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION?	29.1	38.2	41.8	16.7	34.7	37.8	7.9	22.1	11.9	42.0
6	426	63-20 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION?	28.6	34.7	36.4	11.5	27.4	30.1	7.9	21.6	11.9	32.1
6	427	63-21 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION?	28.6	36.7	35.9	13.5	32.6	35.2	9.5	22.6	10.1	33.3
6	428	63-22 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION?	35.0	38.7	34.8	16.0	31.1	32.1	7.9	22.6	14.3	37.0
6	429	63-23 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION?	32.4	34.7	34.2	15.4	31.6	33.2	7.9	22.1	14.9	34.6

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D TSK TITLES

G 447 63-41 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY AMPLIFIERS?
 G 448 63-42 DO YOU TROUBLESHOOT OR REPAIR IF AMPLIFIERS?
 G 449 63-43 DO YOU TROUBLESHOOT OR REPAIR DIFFERENTIATING AMPLIFIERS (DIFF AMPS)?
 G 450 63-44 DO YOU TROUBLESHOOT OR REPAIR OPERATIONAL AMPLIFIERS (OP AMPS)?
 G 451 63-45 DO YOU TROUBLESHOOT OR REPAIR INTEGRATING AMPLIFIERS?
 G 452 63-46 DO YOU TROUBLESHOOT OR REPAIR SUMMING AMPLIFIERS?

304	304	304	305	328	328	328	328	328	328
50	51	54	54	50	51	52	53	54	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
16.5	26.1	32.1	4.5	24.2	34.7	6.3	18.6	7.7	37.0
46.2	62.8	68.5	7.7	51.6	58.2	19.0	34.2	20.2	65.4
36.8	55.8	27.5	23.7	22.6	40.8	9.5	26.1	17.3	42.0
35.7	55.8	51.1	23.7	21.6	41.3	12.7	27.6	17.3	43.2
34.1	48.2	42.9	19.9	24.2	40.3	9.5	25.1	22.0	32.1
13.2	27.1	22.3	11.5	16.3	20.4	7.9	21.6	23.2	32.1

M SOLID-STATE SPECIAL PURPOSE DEVICES (H1), POWER SUPPLIES (H2), OSCILLATORS (H3)

M 453 M1-1 DO YOU USE OR REFER TO VARACTORS/VAPICAP COMPONENTS?
 M 454 M1-2 DO YOU USE OR REFER TO TUNNEL DIODE COMPONENTS?
 M 455 M1-3 DO YOU USE OR REFER TO FIELD EFFECT TRANSISTOR (FET) COMPONENTS?
 M 456 M1-4 DO YOU USE OR REFER TO UNIJUNCTION TRANSISTOR COMPONENTS?
 M 457 M1-5 DO YOU USE OR REFER TO ZENER DIODE COMPONENTS?
 M 458 M1-6 DO YOU USE OR REFER TO INTEGRATED CIRCUIT COMPONENTS?
 M 459 M1-7 DO YOU USE OR REFER TO PIN DIODE COMPONENTS?
 M 460 M1-8 DO YOU USE OR REFER TO LED'S/LCD'S COMPONENTS?
 M 461 M1-9 DO YOU USE OR REFER TO FANTAIL TRANSISTOR COMPONENTS?
 M 462 M1-10 DO YOU USE OR REFER TO SILICON CONTROL RECTIFIER (SCR) COMPONENTS?
 M 463 M1-11 DO YOU USE OR REFER TO TRIAC COMPONENTS?
 M 464 M1-12 DO YOU USE OR REFER TO PROGRAMMABLE UNIJUNCTION TRANSISTOR (PUT) COMPONENTS?

52.2	41.2	67.9	17.3	51.6	48.0	15.9	39.2	8.3	71.6
53.3	58.8	37.0	9.6	24.2	31.6	7.9	39.2	6.0	51.9
32.5	76.9	61.4	39.1	30.0	59.7	9.5	46.2	19.0	69.1
39.6	77.9	54.3	27.6	37.9	69.9	6.3	42.2	19.6	54.3
73.1	85.9	80.4	76.3	66.8	79.5	41.3	58.3	54.2	76.5
67.6	81.4	73.4	71.2	56.8	76.5	66.7	68.3	60.1	70.4
26.9	38.7	40.8	9.6	25.3	32.1	38.1	55.3	11.9	28.4
63.7	76.4	56.0	69.2	48.4	58.2	71.4	53.8	48.2	69.1
11.0	15.1	20.7	7.1	8.4	15.8	.0	8.0	2.4	14.8
48.4	77.9	56.5	41.7	23.2	54.6	14.3	44.2	22.6	64.2
17.6	39.7	25.0	12.8	11.1	14.3	7.9	12.6	7.1	28.4
8.2	13.1	9.2	1.3	6.8	13.8	4.8	10.1	4.2	11.1

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D TSK	TITLES	304 SO (M)	304 S1 (M)	304 S4 (M)	305 S4 (M)	328 S0 (M)	328 S1 (M)	328 S2 (M)	328 S3 (M)	328 S4 (M)	328 S5 (M)
M 965	H1-13 DO YOU USE OR REFER TO SILICON CONTROLLED SWITCH (SCS) COMPONENTS?	15.4	38.7	19.6	7.1	11.6	30.6	1.6	18.1	8.3	23.5
M 966	H1-14 DO YOU USE OR REFER TO SILICON UNILATERAL SWITCH (SUS) COMPONENTS?	5.5	11.6	9.8	1.9	6.8	16.8	1.6	8.5	4.2	13.6
M 967	H2-1 IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES? IF NO, GO TO ITEM H3-1; IF YES, CONTINUE.	86.3	89.9	80.4	85.3	72.1	81.6	84.1	79.4	61.9	91.4
M 968	H2-2 DO YOU INSPECT POWER SUPPLIES?	81.9	82.9	76.6	81.4	69.5	79.1	68.3	69.8	59.5	79.0
M 969	H2-3 DO YOU CLEAN POWER SUPPLIES?	78.0	76.4	71.7	75.6	60.0	73.0	23.8	54.8	45.2	69.1
M 970	H2-4 DO YOU ALIGN OR ADJUST POWER SUPPLIES?	82.4	83.4	70.7	79.5	61.1	79.6	34.9	67.3	52.4	84.0
M 971	H2-5 DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL?	75.3	79.9	75.5	71.8	61.6	76.0	50.8	59.3	51.8	77.8
M 972	H2-6 DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS?	70.3	77.4	71.2	64.7	53.2	69.4	30.2	41.7	41.7	67.9
M 973	H2-7 DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES?	78.0	77.4	73.4	79.5	72.6	80.6	81.0	76.4	60.7	86.4
M 974	H2-8 DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS?	70.3	73.9	69.0	60.9	52.1	69.9	19.3	41.2	40.5	67.9
M 975	H2-9 DO YOU INSPECT OR SERVICE COOLANT LEVELS?	14.3	15.1	12.5	15.4	8.4	11.2	38.1	35.2	2.4	23.5
M 976	H2-10 DO YOU WORK WITH HALF-WAVE RECTIFIERS?	64.3	81.4	69.0	57.7	60.5	70.9	17.5	47.7	36.9	69.1
M 977	H2-11 DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN BRIDGE RECTIFIERS?	59.3	83.4	70.1	60.3	60.0	71.4	25.4	50.8	38.7	65.4
M 978	H2-12 DO YOU WORK WITH BRIDGE RECTIFIERS?	70.3	85.4	74.5	66.0	62.6	73.0	25.4	52.3	41.1	74.1
M 979	H2-13 DO YOU WORK WITH THREE-PHASE RECTIFIERS?	30.2	53.3	21.2	37.8	52.1	37.8	38.1	48.7	23.8	64.2
M 980	H2-14 DO YOU USE OR REFER TO INPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	76.4	87.9	76.1	75.6	63.7	75.5	58.7	64.3	50.6	79.0
M 981	H2-15 DO YOU USE OR REFER TO INPUT FREQUENCIES IN YOUR WORK WITH RECTIFIERS?	62.6	70.4	60.9	60.9	53.2	63.3	47.6	49.7	39.9	67.9
M 982	H2-16 DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	63.7	78.9	66.3	64.1	55.3	69.9	55.6	51.8	47.0	67.9
M 983	H2-17 DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	63.7	78.9	66.3	59.6	55.3	66.3	55.6	54.8	43.5	65.4
M 984	H2-18 DO YOU USE OR REFER TO RIPPLE AMPLITUDE IN YOUR WORK WITH RECTIFIERS?	52.2	75.9	59.2	60.3	38.9	59.2	15.9	49.7	30.4	63.0
M 985	H2-19 DO YOU USE OR REFER TO RIPPLE FREQUENCIES IN YOUR WORK WITH RECTIFIERS?	40.7	55.8	48.4	48.7	35.3	48.0	14.3	40.2	24.4	50.6

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D TSM	TITLES									
	304	304	304	305	328	328	328	328	328	328
M 504 M3-7 DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS?	50	51	54	54	50	51	52	53	54	55
M 505 M3-8 DO YOU USE OR REFER TO FEEDBACK (DEGENERATIVE OR REGENERATIVE)?	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
M 506 M3-9 DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FDD)?	47.3	65.3	53.3	31.4	40.0	49.5	25.4	28.6	20.8	60.5
M 507 M3-10 DO YOU USE OR REFER TO AMPLITUDE STABILITY?	51.6	76.4	62.5	34.6	43.2	60.7	31.7	41.7	26.8	53.1
M 508 M3-11 DO YOU USE OR REFER TO FREQUENCY STABILITY?	47.3	66.3	58.7	35.9	43.2	53.6	28.6	36.2	19.0	53.1
M 509 M3-12 DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT (CRYSTAL OSCILLATIONS)?	46.4	60.3	51.1	28.2	40.0	51.0	25.4	33.2	20.2	61.7
M 510 M3-13 DO YOU USE OR REFER TO HARMONIC DISTORTION?	57.1	70.4	62.5	35.3	48.9	56.1	42.9	43.7	25.0	69.1
M 511 M3-14 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN DC TANK CIRCUITS?	34.6	62.3	39.7	29.5	31.6	47.4	28.6	14.6	13.1	50.6
M 512 M3-15 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN RC NETWORKS?	48.9	64.8	63.0	13.5	41.1	53.6	41.3	36.2	16.7	56.8
M 513 M3-16 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN CRYSTALS?	37.9	61.3	48.9	25.0	35.8	52.6	9.5	31.7	13.7	48.1
M 514 M3-17 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN PHASE LOCK LOOPS (PLL)?	47.3	71.9	53.8	27.6	41.1	60.2	9.5	35.2	19.6	54.3
M 515 M3-18 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN - DON'T KNOW WHICH TYPE OF FDD?	57.7	79.9	57.6	39.7	49.5	64.8	49.2	29.6	21.4	70.4
M 516 M3-19 DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS?	47.3	41.7	52.7	14.7	34.2	30.1	60.3	17.1	8.3	59.3
M 517 M3-20 DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS?	18.1	15.1	14.7	12.2	9.5	14.3	7.9	16.6	11.3	21.0
M 518 M3-21 DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS?	20.9	63.3	38.6	19.9	33.2	50.5	8.8	25.6	8.9	49.4
M 519 M3-22 DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS?	17.0	38.2	33.7	17.9	31.6	49.5	4.8	23.1	8.9	39.5
M 520 M3-23 DO YOU WORK WITH VOLTAGE CONTROL SINUSOIDAL OSCILLATORS?	19.8	51.8	42.4	17.3	33.2	44.4	3.2	22.6	7.7	40.7
M 521 M3-24 DO YOU WORK WITH CRYSTAL SINUSOIDAL OSCILLATORS?	9.9	21.1	16.3	5.1	12.6	15.8	3.2	9.5	4.8	13.6
M 522 M3-25 DO YOU WORK WITH VOLTAGE CONTROL OSCILLATORS (VCO) SINUSOIDAL OSCILLATORS?	47.8	41.2	44.6	14.1	35.3	52.6	36.5	35.7	12.5	46.9
	53.3	77.4	52.7	38.5	44.2	61.7	44.4	25.1	16.7	64.2
	53.3	41.7	50.5	14.1	43.7	52.6	54.0	43.7	8.9	54.3

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D ISK TITLES

H 523 H3-26 DO YOU WORK WITH WIEN BRIDGE OSCILLATORS SINUSOIDAL 11.0 39.7 21.2 3.2 17.4 24.0 3.2 12.1 6.5 19.8
OSCILLATORS?
H 524 H3-27 DO YOU WORK WITH - DON'T KNOW WHICH TYPE OF 25.3 19.1 22.3 16.0 16.3 16.3 7.9 14.1 12.5 33.3
SINUSOIDAL OSCILLATOR?
H 525 H3-28 DO YOU WORK WITH PULSE GENERATING CIRCUITS? 50.5 71.9 36.4 43.6 31.1 62.0 39.7 45.2 23.2 50.6
H 526 H3-29 DO YOU WORK WITH BLOCKING OSCILLATORS? 18.1 51.3 17.4 23.1 23.7 60.7 6.3 31.2 15.5 17.3
H 527 H3-30 DO YOU WORK WITH BURST GENERATORS? 13.2 61.8 7.6 9.0 7.4 41.8 4.8 11.1 6.5 9.9
H 528 H3-31 DO YOU WORK WITH BLOCKED OSCILLATORS? 10.4 39.7 10.3 10.9 14.2 40.3 4.8 13.1 5.0 12.3

I MULTIVIBRATORS (11), LIMITERS AND CLAMPERS (12), ELECTRON TUBES (13)

I 529 I1-1 DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB? 46.2 78.9 44.0 64.1 41.6 62.2 36.5 37.7 36.9 54.3
IF NO, GO TO ITEM I2-1; IF YES, CONTINUE.
I 530 I1-2 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK 33.0 59.8 34.2 30.8 32.6 53.6 15.9 27.1 19.6 44.4
CIRCUIT FREQUENCY DETERMINING DEVICES (FDD)?
I 531 I1-3 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC 40.1 69.3 35.9 41.0 35.3 57.7 17.5 32.7 26.8 45.7
NETWORK FREQUENCY DETERMINING DEVICES (FDD)?
I 532 I1-4 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTAL 36.3 55.8 27.7 34.6 32.1 56.1 25.4 23.6 17.9 42.0
FREQUENCY DETERMINING DEVICES (FDD)?
I 533 I1-5 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN - DON'T 12.6 20.1 10.9 18.6 15.3 18.9 12.7 8.0 14.3 14.8
KNOW WHICH TYPE OF FDD?
I 534 I1-6 DO YOU WORK WITH A STABLE (FEE RUNNING) 42.9 72.9 39.7 50.0 35.3 61.7 33.3 37.7 26.2 51.9
MULTIVIBRATORS?
I 535 I1-7 DO YOU WORK WITH MONOSTABLE (ONE SHOT) MULTIVIBRATORS? 47.3 77.4 40.2 65.4 32.1 62.8 31.7 38.7 26.8 48.1
I 536 I1-8 DO YOU WORK WITH BISTABLE (FLIP FLOP) MULTIVIBRATORS? 49.5 79.4 42.4 68.6 37.4 63.8 31.7 40.2 36.3 54.3
I 537 I1-9 DO YOU WORK WITH R-S FLIP-FLOP INTEGRATED CIRCUIT 18.7 40.7 16.3 41.0 12.1 23.0 31.7 26.1 18.5 37.0
REGULATORS?

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OSCILLATORS, OR MAGNETRONS AS ELECTRON TUBES? IF NO, GO TO ITEM J1-1; IF YES, CONTINUE.

I 551 13-2 DO YOU CHECK THE CONDITION OF ELECTRON TUBES?
I 552 13-3 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES?
I 553 13-4 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES?
I 554 13-5 DO YOU USE SCOPES TO CHECK ELECTRON TUBES?
I 555 13-6 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES?
I 556 13-7 DO YOU USE OR REFER TO CUTOFF?
I 557 13-8 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING?
I 558 13-9 DO YOU USE OR REFER TO PEAK CURRENT RATING?
I 559 13-10 DO YOU USE OR REFER TO TRANSIT TIME?
I 560 13-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING?

304	304	304	305	328	328	328	328	328	328
50	50	54	54	50	51	52	53	54	(M)
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
24.2	62.3	26.1	46.8	12.1	20.9	38.1	29.1	17.9	40.7
19.2	32.2	13.0	30.1	8.9	15.3	31.7	17.6	14.9	23.5
47.3	66.8	47.8	36.5	37.4	58.7	15.9	26.1	20.8	51.9
36.8	53.8	40.8	34.0	33.2	52.0	14.3	25.1	19.0	37.0
36.8	52.8	38.0	33.3	32.6	52.6	7.9	23.6	18.5	38.3
32.4	47.2	36.4	28.2	27.2	45.4	14.3	18.6	12.5	30.9
42.3	62.3	42.9	33.3	34.7	58.2	15.9	26.1	16.1	46.9
41.2	52.8	41.3	26.3	31.1	53.1	11.1	21.1	13.7	44.4
12.1	32.2	15.8	8.3	17.4	30.1	7.9	11.1	8.3	14.8
32.4	57.3	30.4	30.8	22.1	42.4	11.1	18.6	11.7	32.1
32.7	44.2	27.2	27.6	16.9	39.8	7.9	18.6	11.9	25.9
12.6	19.6	11.4	13.5	12.1	21.0	7.9	7.0	8.3	18.5
37.4	74.4	67.9	18.6	55.8	59.7	11.1	28.6	27.4	54.3
33.0	66.3	63.6	17.3	47.9	58.1	9.5	28.1	25.6	43.2
25.3	66.3	62.0	14.7	42.1	53.1	1.6	24.6	28.2	19.8
22.8	63.8	45.7	10.9	36.3	49.5	7.9	20.6	20.2	39.5
24.7	66.8	42.4	13.5	30.5	53.1	7.9	23.1	19.6	35.8
30.8	66.8	33.6	14.1	50.5	52.6	4.8	26.1	25.6	49.4
19.2	66.8	39.1	12.2	29.5	42.9	6.3	21.1	16.7	25.9
10.4	25.6	19.0	6.4	16.8	23.5	4.8	11.1	7.1	14.8
14.8	32.7	25.0	6.4	23.2	27.0	4.8	12.1	9.5	18.5
13.2	30.2	16.3	8.3	15.8	18.9	6.3	9.5	6.0	9.9
23.1	23.1	25.5	3.2	14.7	16.8	4.8	9.0	4.8	9.9

D	TSK	TITLES	304 (M)	304 51 (M)	304 54 (M)	305 54 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
I	561	13-12 DO YOU USE OR REFER TO SATURATION?	20.3	64.8	40.8	9.6	30.5	41.3	7.9	22.1	19.5	24.7
I	562	13-13 DO YOU USE OR REFER TO DC PLATE RESISTANCE?	27.2	42.7	31.5	6.4	21.6	27.6	3.2	14.1	11.9	14.8
I	563	13-14 DO YOU USE OR REFER TO PLATE VOLTAGE?	31.9	78.9	65.8	14.1	51.1	54.1	7.9	23.1	22.6	45.7
I	564	13-15 DO YOU USE OR REFER TO PLATE CURRENT?	28.0	65.3	59.2	10.9	44.7	45.4	7.9	22.1	17.3	40.7
I	565	13-16 DO YOU USE OR REFER TO GRID VOLTAGE?	31.9	73.9	66.3	14.7	51.1	50.0	7.9	24.1	23.2	48.1
I	566	13-17 DO YOU USE OR REFER TO GRID CURRENT?	28.0	63.8	58.7	11.5	40.0	41.3	7.9	23.1	17.9	42.0
I	567	13-18 DO YOU USE OR REFER TO CATHODE VOLTAGE?	33.0	73.9	62.0	15.4	48.9	52.6	7.9	25.6	21.4	44.4
I	568	13-19 DO YOU USE OR REFER TO CATHODE CURRENT?	28.6	62.3	55.4	12.8	40.0	43.4	6.3	22.6	16.7	35.8
I	569	13-20 DO YOU USE OR REFER TO FILAMENT VOLTAGE?	33.5	74.4	67.4	15.4	48.4	57.1	4.8	28.1	23.2	37.0
I	570	13-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)?	8.0	27.1	19.0	2.6	10.0	17.3	4.8	8.5	7.1	6.2
I	571	13-22 DO YOU USE OR REFER TO MULTIGRID ITRIODE, PENTODE, ETC., AMPLIFICATION FACTORS?	9.9	39.7	24.5	3.2	18.9	22.4	1.6	11.1	9.5	13.6
I	572	13-23 DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE 1G, WHICH IS MEASURED IN MHOS?	3.8	11.6	14.7	.0	8.9	12.2	3.2	7.5	4.2	4.9
I	573	13-24 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER CALLED AC PLATE RESISTANCE?	7.1	17.1	12.5	1.3	8.9	11.7	3.2	7.5	5.4	7.4
I	574	13-25 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE CAPACITANCE?	12.6	33.7	28.8	1.9	16.8	24.5	4.8	11.6	5.4	7.4
I	575	13-26 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR WORK WITH ELECTRON TUBES?	7.7	23.6	13.0	2.6	11.1	11.2	7.9	5.5	2.4	7.4
I	576	13-27 DO YOU USE OR REFER TO PLATE VOLTAGE FOR A SPECIFIED 3IAS?	18.1	52.8	37.5	5.1	28.9	35.2	6.3	14.6	11.3	29.6
I	577	13-28 DO YOU USE OR REFER TO PLATE CURRENT FOR A SPECIFIED 3IAS?	14.8	43.7	31.5	3.8	27.4	32.7	6.3	14.1	8.3	25.9
I	578	13-29 DO YOU USE OR REFER TO BIAS REQUIRED FOR CUTOFF?	19.8	64.3	37.5	3.8	27.4	37.2	6.3	17.1	12.5	27.2
I	579	13-30 DO YOU USE OR REFER TO BIAS REQUIRED FOR SATURATION?	18.7	61.8	33.7	3.8	27.4	35.7	6.3	16.1	12.5	24.7
I	580	13-31 DO YOU USE OR REFER TO GAIN?	29.7	59.3	46.7	9.0	35.8	47.4	9.5	25.6	17.3	39.5
I	581	13-32 DO YOU USE OR REFER TO EFFICIENCY?	19.8	45.7	33.3	4.5	28.4	33.7	5.9	17.1	7.7	21.0

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TITLES

J 614 J3-4 DO YOU PERFORM TASKS ON MODEM SYSTEMS STAGES?

J 615 JJ-5 DO YOU USE OR REFER TO THE HETERODYNING OF SIGNALS IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS?

STAGES?

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K A4 SYSTEMS (K1), FM SYSTEMS (K2), NUMBERING SYSTEMS (K3)

619 MI-2 DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS?

M 621 MI-4 DO YOU ALIGN OR ADJUST TO AM TRANSMIT OR RECEIVE SYSTEMS?
 M 622 MI-5 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS?

COMPONENTS?

SYSTEMS?

W 626 MI -9 DO YOU
SINEMOJH07

K 620 KI-11 00 YOU PERFORM TASKS ON AUDIO AMPLIFIER

AM 630 KI-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS?

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D	TSK	TITLES	304 (M)	304 F1 (M)	304 (M)	305 54 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
K	631	K1-14 DO YOU PERFORM TASKS ON IF AMPLIFIERS?	15.4	46.2	60.3	.0	61.6	52.6	3.2	30.2	3.6
K	632	K1-15 DO YOU PERFORM TASKS ON DETECTORS?	16.5	47.7	58.7	1.3	57.9	51.0	3.2	34.7	3.0
K	633	K1-16 DO YOU PERFORM TASKS ON MIXER AMPLIFIERS?	16.5	43.7	59.8	.0	57.4	51.5	3.2	27.1	4.2
K	634	K1-17 DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN TRANSMITTERS?	12.1	35.7	40.8	.0	49.5	35.2	3.2	17.6	3.6
K	635	K1-18 DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN TRANSMITTERS?	15.9	40.7	50.0	.6	62.1	40.8	3.2	20.6	60.5
K	636	K1-19 DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS?	14.1	44.7	62.0	1.3	75.3	61.2	3.2	38.2	4.2
K	637	K1-20 DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS?	16.5	45.7	61.4	1.3	68.4	59.2	3.2	34.7	4.8
K	638	K2-1 DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM K3-1; IF YES, CONTINUE.	64.3	50.3	33.2	4.5	52.1	47.3	19.0	53.3	20.8
K	639	K2-2 DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS?	59.3	46.7	29.3	4.5	49.5	67.1	14.1	49.7	18.5
K	640	K2-3 DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS?	54.9	44.7	27.2	4.5	40.0	59.7	4.8	43.7	16.1
K	641	K2-4 DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS?	60.4	46.2	26.6	3.8	35.3	60.2	9.5	43.2	15.5
K	642	K2-5 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE SYSTEMS?	59.3	46.2	27.2	4.5	50.0	69.9	15.9	48.2	19.6
K	643	K2-6 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE COMPONENTS?	52.2	45.2	26.1	3.8	37.4	62.2	14.3	40.7	16.1
K	644	K2-7 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE SYSTEMS?	54.4	43.2	27.2	4.5	48.9	69.4	9.5	46.2	18.5
K	645	K2-8 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE COMPONENTS?	52.7	44.7	26.1	4.5	35.8	63.3	14.3	40.7	17.9
K	646	K2-9 DO YOU PERFORM LINK PERFORMANCE ASSESSMENTS?	53.8	11.1	9.2	2.6	17.4	17.9	4.8	14.6	7.1
K	647	K2-10 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS?	51.6	41.2	26.6	1.3	30.5	53.1	3.2	22.6	13.7
K	648	K2-11 DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS?	54.4	44.2	24.5	1.3	28.4	57.1	11.1	27.1	12.5
K	649	K2-12 DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)?	52.2	43.2	25.0	3.2	27.9	54.6	14.3	32.2	11.3
K	650	K2-13 DO YOU PERFORM TASKS ON POWER AMPLIFIERS?	53.3	44.7	25.0	2.6	30.5	57.1	14.3	33.2	13.1
K	651	K2-14 DO YOU PERFORM TASKS ON RF AMPLIFIERS?	56.0	44.2	26.6	.6	29.5	58.7	12.7	38.2	12.5
K	652	K2-15 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS?	52.7	36.2	22.3	2.6	26.8	53.1	11.1	32.2	12.5
K	653	K2-16 DO YOU PERFORM TASKS ON IF AMPLIFIERS?	56.0	44.2	26.6	.6	29.5	59.2	12.7	32.2	15.1

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WHEELER ELECTRONIC PRINCIPLES INVENTORY DATA

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MSL 0 TITLES

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K 676 M3-17 DO YOU SUBTRACT OCTAL NUMBERS?
K 677 M3-18 DO YOU ADD HEXADECIMAL NUMBERS?
K 678 M3-19 DO YOU SUBTRACT HEXADECIMAL NUMBERS?
K 679 M3-20 DO YOU DIVIDE BINARY NUMBERS?
K 680 M3-21 DO YOU MULTIPLY BINARY NUMBERS?
K 681 M3-22 DO YOU USE OR REFER TO BINARY CODED DECIMAL (BCD)?
K 682 M3-23 DO YOU USE OR REFER TO GRAY CODE?
K 683 M3-24 DO YOU USE OR REFER TO ICAC CODE?
K 684 M3-25 DO YOU USE OR REFER TO EXCESS-3 CODE?

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LOGIC FUNCTIONS (L1), BOOLEAN EQUATIONS (L2), COUNTERS (L3)

L 685 LI-1 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS? IF NO, GO TO ITEM L2-1; IF YES, CONTINUE.

L 686 LI-2 DO YOU CONSTRUCT TRUTH TABLES FOR 'AND' LOGIC SYMBOLS OR GATES?

L 687 LI-3 DO YOU CONSTRUCT TRUTH TABLES FOR 'OR' LOGIC SYMBOLS OR GATES?

L 680 LI-4 DO YOU CONSTRUCT TRUTH TABLES FOR 'AND' OR 'OR' LOGIC SYMBOLS WITH STATE INDICATORS?

L 689 L1-5 DO YOU CONSTRUCT TRUTH TABLES FOR 'EXCLUSIVE OR' LOGIC SYMBOLS OR GATES?

L 690 L1-6 DO YOU USE OR REFER TO TRUTH TABLES FOR 'AND' LOGIC SYMBOLS OR GATES?
SYMBOLS OR GATES?

L 691 LI-7 DO YOU USE OR REFER TO TRUTH TABLES FOR 'OR' LOGIC SYMBOLS OR GATES?

L 692 L1-8 DO YOU USE OR REFER TO TRUTH TABLES FOR 'AND' OR 'OR' SYMBOLS OR GATES?
LOGIC SYMBOLS WITH STATE INDICATORS?

[illegible]

40.7	66.3	35.9	76.9	30.0	49.0	68.3	36.2	34.5	46.9
23.6	42.2	21.2	44.9	17.9	20.9	36.5	24.6	16.1	32.1
23.6	42.7	21.2	44.9	17.4	20.9	36.5	24.1	16.1	32.1
23.6	41.7	20.7	44.9	16.3	20.9	36.5	23.1	16.1	30.9
22.5	41.7	19.0	44.2	17.4	16.3	36.5	22.6	15.5	32.1
34.6	55.8	31.0	62.2	19.5	29.6	50.8	31.2	25.6	40.7
34.6	55.8	31.0	61.5	19.5	30.1	50.8	31.2	25.6	40.7
33.5	55.3	28.8	61.5	18.4	30.1	47.6	30.7	25.0	39.5

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D	TSK	TITLES	304 50 (M)	304 51 (M)	304 54 (M)	305 54 (M)	320 50 (M)	320 51 (M)	320 52 (M)	320 53 (M)	320 54 (M)	320 55 (M)
L	693	L1-9 DO YOU USE OR REFER TO TRUTH TABLES FOR 'EXCLUSIVE OR' LOGIC SYMBOLS?	29.1	54.3	26.1	57.1	19.5	25.0	50.8	29.1	25.0	42.0
L	694	L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'AND' GATES?	39.0	65.3	35.9	77.6	26.8	47.4	66.7	37.7	31.0	44.4
L	695	L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'OR' GATES?	39.0	65.8	35.9	77.6	27.9	47.4	66.7	37.7	31.0	44.4
L	696	L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'NAND' OR 'MOR' GATES?	39.0	65.8	35.3	71.0	27.9	45.9	65.1	37.7	30.4	44.4
L	697	L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'EXCLUSIVE OR' GATES?	34.6	61.8	29.9	69.9	27.9	36.7	66.7	36.2	29.8	44.4
L	698	L1-14 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR INHIBITED 'AND' GATES?	34.6	60.3	29.9	58.3	23.7	44.9	49.2	34.2	25.0	40.7
L	699	L1-15 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR "8" BARS?	3.3	6.0	4.9	6.4	7.9	6.6	3.2	4.5	6.0	12.3
L	700	L1-16 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR "M" BARS?	3.3	6.0	4.3	5.1	7.9	6.1	3.2	4.5	4.8	12.3
L	701	L1-17 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR COMBINERS?	17.0	19.6	12.5	14.1	9.5	8.7	17.5	13.6	4.5	24.7
L	702	L1-18 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS?	35.7	66.3	30.4	71.2	22.6	45.4	46.0	31.7	26.2	42.0
L	703	L1-19 DO YOU USE OR REFER TO ONE-SHOT MULTIVIBRATOR SYMBOLS?	34.1	64.3	29.9	71.2	17.4	45.4	46.0	32.2	22.0	42.0
L	704	L1-20 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT OR SCHEMATIC DIAGRAMS?	36.3	65.3	32.6	73.7	22.6	45.9	52.4	33.2	28.0	43.2
L	705	L1-21 DO YOU USE OR REFER TO ONE-SHOT CIRCUIT OR SCHEMATIC DIAGRAMS?	33.5	62.8	30.4	69.2	17.4	44.9	44.4	33.7	19.6	42.0
L	706	L1-22 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES?	28.6	54.3	28.3	55.1	17.4	27.6	44.4	26.6	20.2	35.8
L	707	L1-23 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS?	21.4	46.2	20.7	55.0	15.8	29.1	30.2	22.1	23.2	28.4
L	708	L1-24 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS?	21.4	46.2	20.7	53.0	15.8	29.1	30.2	22.1	22.6	27.2
L	709	L1-25 DO YOU USE OR REFER TO NONCOMPLEMENTED FLIP-FLOP LOGIC SYMBOLS?	18.7	38.7	19.6	48.7	14.2	25.0	30.2	19.6	19.6	24.7
L	710	L1-26 DO YOU CONSTRUCT TRUTH TABLES FOR "8" BARS?	3.3	4.0	2.7	3.6	6.3	2.0	1.6	2.5	3.6	8.6
L	711	L1-27 DO YOU CONSTRUCT TRUTH TABLES FOR "M" BARS?	3.3	4.0	2.7	3.2	6.3	2.0	1.6	2.5	3.0	8.6
L	712	L1-28 DO YOU CONSTRUCT TRUTH TABLES FOR COMBINERS?	9.3	10.1	4.3	6.4	8.4	4.1	4.8	5.0	4.2	11.1

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TITLES

L 713 L1-29 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS?
L 714 L1-30 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS?

L 715 L1-31 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS?

L 716 LI-32 DO YOU TRACE DATA FLOW THROUGH NONCOMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS?

L 717 LI-33 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS?

L 718 L2-1 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS? IF NO, GO TO ITEM L3-1; IF YES, CONTINUE.

L 719 L2-2 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED

TRANSISTOR LOGIC (DCTL) CIRCUITS?

L 720 L2-3 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS?

L 721 L2-4 DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS?

L 722 L2-5 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES?

L 723 L2-6 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS?

L 724 L2-7 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA?

L 725 L2-8 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES?

L 726 L2-9 DO YOU USE OR REFER TO TRUTH TABLES FOR CUM LOGIC (CML) CIRCUITS?

L 727 L2-10 DO YOU USE OR REF
MORE THAN ONE GATE?

L 728 L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL

ONLY ON FULL MOONER LOGIC DIMENSIONS:

304	304	305	320	320	320	320
(M)	(P)	(M)	(M)	(H)	(H)	(H)
50	51	54	50	51	52	53
(M)	(P)	(M)	(M)	(H)	(H)	(H)
320	320	320	320	320	320	320
(M)	(P)	(M)	(M)	(H)	(H)	(H)
55	54	54	55	54	54	55
(H)	(M)	(M)	(H)	(H)	(H)	(H)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2
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4.2	43.7	23.4	53.2	16.8	28.6	38.1	21.6	19.6	29.6
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1.4	38.2	20.7	52.6	15.8	23.5	36.5	19.1	17.3	30.9
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Year	1965	1966	1967	1968	1969	1970	1971	1972
1965	6.5	33.7	16.3	35.9	8.4	8.7	31.7	16.1
1966	10.1	27.2	10.1	16.1	8.7	31.7	16.1	10.1
1967	16.1	10.1	16.1	10.1	16.1	10.1	16.1	10.1
1968	10.1	16.1	10.1	16.1	10.1	16.1	10.1	16.1
1969	16.1	10.1	16.1	10.1	16.1	10.1	16.1	10.1
1970	10.1	16.1	10.1	16.1	10.1	16.1	10.1	16.1
1971	16.1	10.1	16.1	10.1	16.1	10.1	16.1	10.1
1972	10.1	16.1	10.1	16.1	10.1	16.1	10.1	16.1

Year	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
5.4	27.1	16.8	50.0	18.4	26.5	30.2	21.1	20.2	21.0								

	6.6	10.6	7.1	17.3	8.9	9.6	11.1	7.5	4.8	8.6
1	6.6	10.6	7.1	17.3	8.9	9.6	11.1	7.5	4.8	8.6

	3.0	5.0	5.0	5.0	5.0	3.6	1.6	4.5	3.0	7.9
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	6.0	8.5	6.5	21.8	11.1	7.1	12.7	9.5	8.9	9.9
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3.2	23.1	15.8	46.9	15.0	24.5	22.2	21.1	17.2	14.0
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	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1
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6.6	12.6	7.6	29.5	13.2	8.7	19.0	12.6	12.5	11.1
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C.4	17.1	10.9	26.9	10.0	11.2	12.7	10.1	8.3	13.6
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5.5	7.5	6.0	9.0	5.0	5.1	9.5	6.5	4.2	9.9
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3.7	25.6	15.2	48.1	15.8	22.4	28.6	22.1	17.9	17.3
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Year	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099
6.0	13.6	9.8	19.9	8.9	9.7	17.5	10.6	8.3	16.0																																																																																																																																			

D	ISM	TITLES	304 50 (M)	304 51 (M)	304 54 (M)	305 54 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
L 729	L2-12	DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS?	8.2	18.6	12.5	27.6	10.0	9.7	19.0	11.6	8.9	16.0
L 730	L3-1	DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB?	33.5	64.8	30.4	65.4	26.3	37.2	55.6	38.7	32.7	53.1
		IF NO, GO TO ITEM M1-1; IF YES, CONTINUE.										
L 731	L3-2	DO YOU USE OR REFER TO UP-COUNTERS?	29.1	55.3	27.7	63.5	26.8	38.3	58.7	36.7	29.8	49.4
L 732	L3-3	DO YOU USE OR REFER TO DOWN-COUNTERS?	28.6	50.8	25.5	62.2	25.8	35.2	58.7	36.7	27.4	44.4
L 733	L3-4	DO YOU USE OR REFER TO SERIAL COUNTERS?	24.2	43.2	26.1	62.2	23.7	34.7	52.4	31.7	28.0	48.1
L 734	L3-5	DO YOU USE OR REFER TO PARALLEL COUNTERS?	23.1	37.7	23.9	59.0	22.1	25.5	49.2	29.6	22.0	40.7
L 735	L3-6	DO YOU USE OR REFER TO RING COUNTERS?	11.0	31.7	15.8	46.2	7.9	8.7	30.2	21.1	11.3	17.3
L 736	L3-7	DO YOU USE OR REFER TO DECADE (MOD 10) COUNTERS?	22.5	56.3	17.9	34.6	16.3	12.8	31.7	25.6	14.3	23.5
L 737	L3-8	DO YOU USE OR REFER TO COUNT DETECT CIRCUITS?	18.7	47.7	19.6	58.3	13.2	17.3	38.1	24.6	19.0	32.1
L 738	L3-9	DO YOU USE OR REFER TO DOWN CLOCKS?	26.9	61.3	27.2	60.9	23.2	31.1	57.1	35.2	26.8	44.4
L 739	L3-10	DO YOU USE OR REFER TO UP CLOCKS?	26.9	60.8	26.6	60.9	22.6	31.1	57.1	35.2	28.0	46.9
L 740	L3-11	DO YOU USE OR REFER TO OTHER MODULOUS COUNTERS?	18.1	26.6	12.5	34.6	9.5	13.3	30.2	20.6	13.7	25.9
L 741	L3-12	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-COUNTERS?	26.4	46.2	26.1	60.9	14.2	30.1	44.4	27.6	16.1	43.2
L 742	L3-13	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DOWN-COUNTERS?	26.4	43.7	23.9	59.0	13.7	28.6	44.4	27.1	16.1	38.3
L 743	L3-14	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-DOWN COUNTERS?	20.9	35.2	20.1	50.0	10.5	20.9	38.1	25.1	14.3	37.0
L 744	L3-15	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DECADE COUNTERS?	22.0	47.7	17.9	34.6	10.5	12.2	23.8	23.6	11.9	27.2
L 745	L3-16	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF RING COUNTERS?	11.5	26.1	13.6	40.4	4.7	7.7	22.2	18.6	7.1	16.0
L 746	L3-17	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF COUNTERS FEEDING STORAGE REGISTERS?	19.8	31.7	18.5	52.6	11.6	15.8	28.6	24.6	12.5	38.1
L 747	L3-18	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS?	24.2	29.1	22.3	60.9	13.7	14.3	42.9	26.1	14.9	40.7
L 748	L3-19	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF COUNTERS?	19.2	28.1	14.1	39.1	7.4	15.3	30.2	20.1	8.9	29.6

WHEELER ELECTRONIC PRINCIPLES INVENTORY DATA

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D	TSM	TITLES	304 (M)	304 51 (M)	304 54 (M)	305 54 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
L	749	L3-20 DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF DECADE COUNTERS?	11.0	23.1	8.7	12.8	4.7	6.1	14.3	9.5	7.1	12.3
L	750	L3-21 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING COUNTERS FOR SPECIFIC INPUT PULSES?	12.6	30.7	14.1	35.9	5.8	9.7	20.6	16.1	7.7	18.5
L	751	L3-22 DO YOU DETERMINE THE APPROPRIATE 'AND' GATE NECESSARY IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT?	17.0	39.2	18.5	46.8	10.5	15.3	23.8	17.1	10.1	25.9
M		----- TIMING CIRCUITS (M1), USE OF SIGNAL GENERATORS (M2), MOTORS AND GENERATORS (M3) -----										
M	752	M1-1 DO YOU WORK WITH SAWTOOTH WAVE GENERATOR TIMING CIRCUITS?	32.4	54.3	33.7	30.8	26.3	66.3	19.0	55.3	24.4	55.6
M	753	M1-2 DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATOR TIMING CIRCUITS?	13.7	28.1	17.4	12.2	15.3	64.3	7.9	30.2	10.1	13.6
M	754	M1-3 DO YOU WORK WITH PULSED OSCILLATOR TIMING CIRCUITS?	30.8	53.8	22.8	44.9	22.1	60.2	33.3	39.7	23.2	44.4
M	755	M1-4 DO YOU WORK WITH BLOCKING OSCILLATOR TIMING CIRCUITS?	12.1	42.7	13.0	25.0	16.3	64.3	11.1	28.6	13.1	17.3
M	756	M1-5 DO YOU WORK WITH MASTER STATION TIMING CIRCUITS?	25.3	21.1	16.3	35.3	11.1	32.7	27.0	12.6	6.5	24.7
M	757	M1-6 DO YOU USE OR REFER TO RISE TIME?	32.4	79.4	28.8	69.2	20.0	67.9	46.0	49.7	29.2	48.1
M	758	M1-7 DO YOU USE OR REFER TO FALL OR FLYBACK TIME?	31.9	70.9	25.5	62.2	17.9	59.7	41.3	48.2	23.2	42.0
M	759	M1-8 DO YOU USE OR REFER TO SWEEP TIME?	38.5	67.8	33.2	60.3	24.7	70.4	36.5	62.8	37.5	54.3
M	760	M1-9 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH WAVEFORMS?	22.5	36.7	20.1	28.8	16.3	64.8	12.7	38.2	20.8	32.1
M	761	M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH WAVEFORMS?	20.9	34.7	20.7	27.6	16.3	63.3	12.7	45.2	22.0	32.1
M	762	M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH WAVEFORMS?	16.5	30.7	19.0	22.4	13.2	49.0	12.7	39.2	16.1	27.2
M	763	M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH WAVEFORMS?	19.2	40.7	20.7	26.3	14.2	61.2	15.9	33.2	22.0	28.4

0 FSM TITLES

M 764	M2-1 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M3-1; IF YES, CONTINUE.	66.7	77.9	80.4	38.5	70.0	75.5	57.1	72.9	51.2	77.8
M 765	M2-2 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS?	67.0	72.9	78.8	35.3	68.4	74.0	54.0	67.8	50.6	74.1
M 766	M2-3 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS?	58.8	59.3	60.9	27.6	53.2	57.7	33.3	47.2	38.7	66.7
M 767	M2-4 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS?	50.5	51.8	60.9	27.6	54.7	58.2	42.9	47.2	39.9	58.0
M 768	M2-5 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS?	36.8	43.7	54.3	23.7	45.3	46.4	11.1	24.6	21.4	43.2
M 769	M2-6 DO YOU USE AUDIO SINE-WAVE GENERATORS?	52.2	55.8	67.4	19.2	63.2	55.1	6.3	18.1	36.9	75.3
M 770	M2-7 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE?	28.0	35.2	28.3	17.9	25.3	41.3	9.5	24.6	14.3	54.3
M 771	M2-8 DO YOU USE RF GENERATORS LESS THAN 1,000 MHZ?	48.4	56.8	65.2	10.9	60.5	59.2	27.0	42.2	19.6	65.4
M 772	M2-9 DO YOU USE RF GENERATORS GREATER THAN 1,000 MHZ?	52.2	48.7	28.3	3.8	28.9	59.2	41.3	66.8	17.9	33.3
M 773	M2-10 DO YOU USE WHITE NOISE GENERATORS?	23.1	4.5	7.6	11.5	4.2	3.1	4.8	21.6	7.1	17.3
M 774	M2-11 DO YOU USE PATTERN GENERATORS?	22.5	8.5	8.7	20.5	8.4	12.2	3.2	11.1	3.0	27.2
M 775	M2-12 DO YOU USE PSEUDO-RANDOM GENERATORS?	6.6	4.5	3.8	1.9	5.3	5.1	3.2	9.0	1.8	25.9
M 776	M2-13 DO YOU USE TIME MARK GENERATORS?	14.8	37.7	10.9	6.4	6.8	30.1	9.5	18.6	5.4	30.9
M 777	M2-14 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION GENERATORS?	27.5	44.2	17.9	16.7	17.4	43.9	27.0	35.2	15.5	44.4
M 778	M3-1 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS, GENERATORS (SERVO), OR ALTERNATORS? IF NO, GO TO ITEM M1-1; IF YES, CONTINUE.	22.0	46.7	48.4	51.3	42.1	58.2	7.9	34.2	37.5	54.3
M 779	M3-2 DO YOU INSPECT MOTORS?	19.2	47.2	46.7	49.4	40.0	56.6	4.8	32.7	32.7	45.7
M 780	M3-3 DO YOU CLEAN OR LUBRICATE MOTORS?	17.6	43.7	44.0	45.5	36.3	50.0	3.2	27.6	29.2	37.0
M 781	M3-4 DO YOU OPERATE MOTORS?	15.4	38.2	39.1	40.4	38.4	55.6	7.9	30.7	27.4	44.4
M 782	M3-5 DO YOU REMOVE OR REPLACE COMPLETE MOTORS?	15.4	44.2	44.6	43.6	40.0	58.7	4.8	30.7	31.0	46.9
M 783	M3-6 DO YOU REMOVE OR REPLACE MOTOR PARTS?	7.7	20.1	27.2	26.3	14.7	23.0	3.2	18.1	5.4	19.8

WHEELER ELECTRONIC PRINCIPLES INVENTORY DATA

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D	TSK	TITLES	304 (M)	304 50 (M)	304 51 (M)	304 54 (M)	305 54 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
M	784	M3-7 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF MOTORS?	17.0	43.7	42.4	44.2	38.9	57.7	6.3	30.7	32.1	45.7
M	785	M3-8 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS?	7.1	13.6	19.6	19.9	12.6	13.3	3.2	11.1	4.8	13.6
M	786	M3-9 DO YOU PERFORM TASKS ON MOTOR FIELD COILS?	3.8	6.0	9.2	10.3	5.3	7.7	.0	2.5	3.6	7.4
M	787	M3-10 DO YOU PERFORM ANY TASKS ON MOTOR ARMATURES?	7.7	9.5	12.0	13.5	7.4	11.2	.0	7.5	3.0	6.2
M	788	M3-11 DO YOU PERFORM ANY TASKS ON MOTOR ROTORS?	7.1	9.0	11.4	14.7	6.8	12.8	.0	7.5	3.6	7.0
M	789	M3-12 DO YOU PERFORM ANY TASKS ON MOTOR BRUSHES?	7.7	7.0	17.9	22.4	11.6	16.3	1.6	11.6	3.6	6.2
M	790	M3-13 DO YOU PERFORM ANY TASKS ON MOTOR SLIP RINGS?	4.4	5.0	11.4	10.3	5.8	17.3	1.6	5.5	3.6	4.9
M	791	M3-14 DO YOU PERFORM ANY TASKS ON MOTOR COMMUTATORS?	3.8	3.5	11.4	11.5	6.3	8.7	.0	5.5	1.8	3.7
M	792	M3-15 DO YOU PERFORM ANY TASKS ON MOTOR POLE PIECES?	7.3	3.5	8.7	9.0	6.8	5.6	.0	2.0	1.2	3.7
M	793	M3-16 DO YOU DETERMINE OR MEASURE FORCE OR TORQUE CREATED BY A MOTOR?	2.2	1.0	7.6	7.1	5.8	14.8	.0	4.0	2.4	2.5
M	794	M3-17 DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR?	3.8	10.6	10.9	10.9	10.0	18.9	1.6	6.0	7.7	7.4
M	795	M3-18 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS?	2.7	6.0	6.5	8.3	6.3	14.3	.0	2.5	9.3	8.6
M	796	M3-19 DO YOU WORK WITH SYNCHRONOUS MOTORS?	8.8	15.6	23.4	23.7	15.3	48.5	.0	7.5	23.2	17.3
M	797	M3-20 DO YOU WORK WITH INDUCTION MOTORS?	6.6	17.1	23.4	15.4	13.2	37.2	4.8	11.1	12.5	9.9
M	798	M3-21 DO YOU WORK WITH SPLIT-PHASE MOTORS?	7.7	21.1	12.5	10.9	8.9	34.2	1.6	6.5	10.1	7.4
M	799	M3-22 DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS?	8.2	21.1	21.7	14.7	34.7	3.2	11.6	12.5	16.0	16.0
M	800	M3-23 DO YOU WORK WITH SERVOS OR SYNCHROS MOTORS?	12.6	13.1	33.2	29.5	32.1	57.7	.0	12.6	36.3	45.7
M	801	M3-24 DO YOU WORK WITH SHADED-POLE MOTORS?	1.6	2.5	1.6	4.5	3.2	4.1	.0	2.0	1.8	1.2
M	802	M3-25 DO YOU INSPECT GENERATORS OR ALTERNATORS?	9.9	18.1	12.0	12.8	6.8	12.2	1.6	6.0	10.1	6.2
M	803	M3-26 DO YOU CLEAN OR LUBRICATE GENERATORS OR ALTERNATORS?	6.6	8.5	8.2	11.5	5.3	9.7	1.6	5.0	5.4	6.2
M	804	M3-27 DO YOU OPERATE GENERATORS OR ALTERNATORS?	11.0	20.6	12.0	8.3	7.4	12.2	1.6	7.0	8.3	6.2
M	805	M3-28 DO YOU REMOVE OR REPLACE COMPLETE GENERATORS OR ALTERNATORS?	3.8	5.0	6.0	6.4	6.8	10.2	1.6	4.0	9.5	4.9
M	806	M3-29 DO YOU REMOVE OR REPLACE GENERATOR, ALTERNATOR, OR PARTS?	3.3	5.5	5.4	6.4	4.2	8.2	1.6	2.0	5.4	3.7

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TITLES

M 007 M3-10 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS OR ALTERNATORS?

M 000 M3-31 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS OR ALTERNATORS?

N. HETEROMOVEMENTS (N1), SATURABLE REACTORS AND MAGNETIC AMPLIFIERS (N2), WAVESHAPING CIRCUITS (N3)

N 009	M1-1 DO YOU WORK WITH METERS IN YOUR PRESENT JOB?	IF NO,	GO TO ITEM N2-1; IF YES, CONTINUE.
	80.0	84.9	79.9
	60.0	74.4	65.0
	80.0	85.7	60.3
	83.9	79.2	81.5

[illegible]

INTERNAL METER PARTS!
 MI-3 DO YOU CONSIDER THE FUNCTIONS OF MOVING COIL INTERNAL
 METER PARTS?

[illegible]

INTERNAL METER PARIST	
N 013 MI-5	DO YOU READ METER SCALES?
01.3	04.9
00.4	73.1
04.2	86.7
61.9	83.9
76.8	80.2
27.2	
N 014 MI-6	
DO YOU EXTEND THE RANGE OF AMMETER?	
10.6	15.7
27.7	24.4
30.3	15.9
38.7	28.0

	DO YOU EXTEND THE RANGE OF AMMETERS?		DO YOU EXTEND THE RANGE OF VOLTMETERS?	
M 814	35.7	27.1	49.2	39.3
M 815	35.7	27.1	49.2	39.3
M 816	35.7	27.1	49.2	39.3
M 817	35.7	27.1	49.2	39.3
M 818	35.7	27.1	49.2	39.3
M 819	35.7	27.1	49.2	39.3
M 820	35.7	27.1	49.2	39.3
M 821	35.7	27.1	49.2	39.3
M 822	35.7	27.1	49.2	39.3
M 823	35.7	27.1	49.2	39.3
M 824	35.7	27.1	49.2	39.3
M 825	35.7	27.1	49.2	39.3
M 826	35.7	27.1	49.2	39.3
M 827	35.7	27.1	49.2	39.3
M 828	35.7	27.1	49.2	39.3
M 829	35.7	27.1	49.2	39.3
M 830	35.7	27.1	49.2	39.3
M 831	35.7	27.1	49.2	39.3
M 832	35.7	27.1	49.2	39.3
M 833	35.7	27.1	49.2	39.3
M 834	35.7	27.1	49.2	39.3
M 835	35.7	27.1	49.2	39.3
M 836	35.7	27.1	49.2	39.3
M 837	35.7	27.1	49.2	39.3
M 838	35.7	27.1	49.2	39.3
M 839	35.7	27.1	49.2	39.3
M 840	35.7	27.1	49.2	39.3
M 841	35.7	27.1	49.2	39.3
M 842	35.7	27.1	49.2	39.3
M 843	35.7	27.1	49.2	39.3
M 844	35.7	27.1	49.2	39.3
M 845	35.7	27.1	49.2	39.3
M 846	35.7	27.1	49.2	39.3
M 847	35.7	27.1	49.2	39.3
M 848	35.7	27.1	49.2	39.3
M 849	35.7	27.1	49.2	39.3
M 850	35.7	27.1	49.2	39.3
M 851	35.7	27.1	49.2	39.3
M 852	35.7	27.1	49.2	39.3
M 853	35.7	27.1	49.2	39.3
M 854	35.7	27.1	49.2	39.3
M 855	35.7	27.1	49.2	39.3
M 856	35.7	27.1	49.2	39.3
M 857	35.7	27.1	49.2	39.3
M 858	35.7	27.1	49.2	39.3
M 859	35.7	27.1	49.2	39.3
M 860	35.7	27.1	49.2	39.3
M 861	35.7	27.1	49.2	39.3
M 862	35.7	27.1	49.2	39.3
M 863	35.7	27.1	49.2	39.3
M 864	35.7	27.1	49.2	39.3
M 865	35.7	27.1	49.2	39.3
M 866	35.7	27.1	49.2	39.3
M 867	35.7	27.1	49.2	39.3
M 868	35.7	27.1	49.2	39.3
M 869	35.7	27.1	49.2	39.3
M 870	35.7	27.1	49.2	39.3
M 871	35.7	27.1	49.2	39.3
M 872	35.7	27.1	49.2	39.3
M 873	35.7	27.1	49.2	39.3
M 874	35.7	27.1	49.2	39.3
M 875	35.7	27.1	49.2	39.3
M 876	35.7	27.1	49.2	39.3
M 877	35.7	27.1	49.2	39.3
M 878	35.7	27.1	49.2	39.3
M 879	35.7	27.1	49.2	39.3
M 880	35.7	27.1	49.2	39.3
M 881	35.7	27.1	49.2	39.3
M 882	35.7	27.1	49.2	39.3
M 883	35.7	27.1	49.2	39.3
M 884	35.7	27.1	49.2</	

Q	ANSWER	POINTS	SCORE
N 816	NI-8 DO YOU ZERO OHMMETERS?	79.7	84.4
N 817	NI-9 DO YOU ZERO OHMMETERS?	41.0	51.8
N 818	NI-10 DO YOU USE OR DEER?	57.3	57.3
N 819	NI-11 DO YOU ZERO OHMMETERS?	32.1	32.1
N 820	NI-12 DO YOU ZERO OHMMETERS?	45.8	50.5
N 821	NI-13 DO YOU ZERO OHMMETERS?	33.3	33.3
N 822	NI-14 DO YOU ZERO OHMMETERS?	83.2	86.2
N 823	NI-15 DO YOU ZERO OHMMETERS?	71.8	71.8
N 824	NI-16 DO YOU ZERO OHMMETERS?	79.9	79.9
N 825	NI-17 DO YOU ZERO OHMMETERS?	65.1	65.1
N 826	NI-18 DO YOU ZERO OHMMETERS?	80.4	80.4
N 827	NI-19 DO YOU ZERO OHMMETERS?	40.7	37.5
N 828	NI-20 DO YOU ZERO OHMMETERS?	33.3	33.3
N 829	NI-21 DO YOU ZERO OHMMETERS?	41.0	41.0
N 830	NI-22 DO YOU ZERO OHMMETERS?	57.3	57.3
N 831	NI-23 DO YOU ZERO OHMMETERS?	32.1	32.1
N 832	NI-24 DO YOU ZERO OHMMETERS?	45.8	50.5
N 833	NI-25 DO YOU ZERO OHMMETERS?	33.3	33.3
N 834	NI-26 DO YOU ZERO OHMMETERS?	83.2	86.2
N 835	NI-27 DO YOU ZERO OHMMETERS?	71.8	71.8
N 836	NI-28 DO YOU ZERO OHMMETERS?	79.9	79.9
N 837	NI-29 DO YOU ZERO OHMMETERS?	65.1	65.1
N 838	NI-30 DO YOU ZERO OHMMETERS?	80.4	80.4
N 839	NI-31 DO YOU ZERO OHMMETERS?	40.7	37.5
N 840	NI-32 DO YOU ZERO OHMMETERS?	33.3	33.3
N 841	NI-33 DO YOU ZERO OHMMETERS?	41.0	41.0
N 842	NI-34 DO YOU ZERO OHMMETERS?	57.3	57.3
N 843	NI-35 DO YOU ZERO OHMMETERS?	32.1	32.1
N 844	NI-36 DO YOU ZERO OHMMETERS?	45.8	50.5
N 845	NI-37 DO YOU ZERO OHMMETERS?	33.3	33.3
N 846	NI-38 DO YOU ZERO OHMMETERS?	83.2	86.2
N 847	NI-39 DO YOU ZERO OHMMETERS?	71.8	71.8
N 848	NI-40 DO YOU ZERO OHMMETERS?	79.9	79.9
N 849	NI-41 DO YOU ZERO OHMMETERS?	65.1	65.1
N 850	NI-42 DO YOU ZERO OHMMETERS?	80.4	80.4
N 851	NI-43 DO YOU ZERO OHMMETERS?	40.7	37.5
N 852	NI-44 DO YOU ZERO OHMMETERS?	33.3	33.3
N 853	NI-45 DO YOU ZERO OHMMETERS?	41.0	41.0
N 854	NI-46 DO YOU ZERO OHMMETERS?	57.3	57.3
N 855	NI-47 DO YOU ZERO OHMMETERS?	32.1	32.1
N 856	NI-48 DO YOU ZERO OHMMETERS?	45.8	50.5
N 857	NI-49 DO YOU ZERO OHMMETERS?	33.3	33.3
N 858	NI-50 DO YOU ZERO OHMMETERS?	83.2	86.2
N 859	NI-51 DO YOU ZERO OHMMETERS?	71.8	71.8
N 860	NI-52 DO YOU ZERO OHMMETERS?	79.9	79.9
N 861	NI-53 DO YOU ZERO OHMMETERS?	65.1	65.1
N 862	NI-54 DO YOU ZERO OHMMETERS?	80.4	80.4
N 863	NI-55 DO YOU ZERO OHMMETERS?	40.7	37.5
N 864	NI-56 DO YOU ZERO OHMMETERS?	33.3	33.3
N 865	NI-57 DO YOU ZERO OHMMETERS?	41.0	41.0
N 866	NI-58 DO YOU ZERO OHMMETERS?	57.3	57.3
N 867	NI-59 DO YOU ZERO OHMMETERS?	32.1	32.1
N 868	NI-60 DO YOU ZERO OHMMETERS?	45.8	50.5
N 869	NI-61 DO YOU ZERO OHMMETERS?	33.3	33.3
N 870	NI-62 DO YOU ZERO OHMMETERS?	83.2	86.2
N 871	NI-63 DO YOU ZERO OHMMETERS?	71.8	71.8
N 872	NI-64 DO YOU ZERO OHMMETERS?	79.9	79.9
N 873	NI-65 DO YOU ZERO OHMMETERS?	65.1	65.1
N 874	NI-66 DO YOU ZERO OHMMETERS?	80.4	80.4
N 875	NI-67 DO YOU ZERO OHMMETERS?	40.7	37.5
N 876	NI-68 DO YOU ZERO OHMMETERS?	33.3	33.3
N 877	NI-69 DO YOU ZERO OHMMETERS?	41.0	41.0
N 878	NI-70 DO YOU ZERO OHMMETERS?	57.3	57.3
N 879	NI-71 DO YOU ZERO OHMMETERS?	32.1	32.1
N 880	NI-72 DO YOU ZERO OHMMETERS?	45.8	50.5
N 881	NI-73 DO YOU ZERO OHMMETERS?	33.3	33.3
N 882	NI-74 DO YOU ZERO OHMMETERS?	83.2	86.2
N 883	NI-75 DO YOU ZERO OHMMETERS?	71.8	71.8
N 884	NI-76 DO YOU ZERO OHMMETERS?	79.9	79.9
N 885	NI-77 DO YOU ZERO OHMMETERS?	65.1	65.1
N 886	NI-78 DO YOU ZERO OHMMETERS?	80.4	80.4
N 887	NI-79 DO YOU ZERO OHMMETERS?	40.7	37.5
N 888	NI-80 DO YOU ZERO OHMMETERS?	33.3	33.3
N 889	NI-81 DO YOU ZERO OHMMETERS?	41.0	41.0
N 890	NI-82 DO YOU ZERO OHMMETERS?	57.3	57.3
N 891	NI-83 DO YOU ZERO OHMMETERS?	32.1	32.1
N 892	NI-84 DO YOU ZERO OHMMETERS?	45.8	50.5
N 893	NI-85 DO YOU ZERO OHMMETERS?	33.3	33.3
N 894	NI-86 DO YOU ZERO OHMMETERS?	83.2	86.2
N 895	NI-87 DO YOU ZERO OHMMETERS?	71.8	71.8
N 896	NI-88 DO YOU ZERO OHMMETERS?	79.9	79.9
N 897	NI-89 DO YOU ZERO OHMMETERS?	65.1	65.1
N 898	NI-90 DO YOU ZERO OHMMETERS?	80.4	80.4
N 899	NI-91 DO YOU ZERO OHMMETERS?	40.7	37.5
N 900	NI-92 DO		

N 818	MI-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY	41.2	55.3	57.6	30.8	41.6	52.0	23.8	47.2	43.5	55.0
N 819 <td>MI-10 DO YOU HAVE RECORD OF MEASUREMENTS</td> <td>41.2 <td>55.3 <td>57.6 <td>30.8 <td>41.6 <td>52.0 <td>23.8 <td>47.2 <td>43.5 <td>55.0</td> </td></td></td></td></td></td></td></td></td>	MI-10 DO YOU HAVE RECORD OF MEASUREMENTS	41.2 <td>55.3 <td>57.6 <td>30.8 <td>41.6 <td>52.0 <td>23.8 <td>47.2 <td>43.5 <td>55.0</td> </td></td></td></td></td></td></td></td>	55.3 <td>57.6 <td>30.8 <td>41.6 <td>52.0 <td>23.8 <td>47.2 <td>43.5 <td>55.0</td> </td></td></td></td></td></td></td>	57.6 <td>30.8 <td>41.6 <td>52.0 <td>23.8 <td>47.2 <td>43.5 <td>55.0</td> </td></td></td></td></td></td>	30.8 <td>41.6 <td>52.0 <td>23.8 <td>47.2 <td>43.5 <td>55.0</td> </td></td></td></td></td>	41.6 <td>52.0 <td>23.8 <td>47.2 <td>43.5 <td>55.0</td> </td></td></td></td>	52.0 <td>23.8 <td>47.2 <td>43.5 <td>55.0</td> </td></td></td>	23.8 <td>47.2 <td>43.5 <td>55.0</td> </td></td>	47.2 <td>43.5 <td>55.0</td> </td>	43.5 <td>55.0</td>	55.0

MOVEMENTS?												
N 819	NI-11	DO YOU CONSIDER BALLASTIC RESPONSE OF METER	9.3	8.0	9.2	5.1	11.6	10.2	7.9	8.0	3.6	14.0

	28.0	34.7	29.9	24.4	30.0	36.7	25.4	33.7	22.6	42.0
N 820 N1-12 DO YOU CONSIDER OTHER METER MOVEMENTS?										
N 821 N2-1 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC	8.8	33.7	9.2	10.9	6.8	15.3	1.6	15.1	9.5	1.2

AMPLIFIERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM NJ-1;
IF YES, CONTINUE.

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TITLES

2-2 DO YOU INSPECT SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?

2-3 DO YOU CLEAN SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?

22-4 DO YOU ADJUST SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?

2-5 DO YOU TROUBLESHOOT SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?

2-6 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS?

2-7 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS?

2-8 DO YOU USE OR REFER TO HYSTERESIS CURVES OR LOOPS?
2-9 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUT

WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SATURABLE REACTORS?

Q-10 DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SATURABLE REACTORS?

2-11 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT
WAVEFORMS FOR MAGNETIC AMPLIFIERS?

SYMBOLS? 1 00 NORM WITH HANGING LINE
--12 00 YOU USE OR REFER TO SATUPABLE REACTOR SCHEMATIC

Q108? IF NO, GO TO ITEM 01-1; IF YES, CONTINUE.

Q-3 DO YOU USE OR REFER TO PULSE WIDTH (PW)?

DO YOU USE OR REFER TO PULSE RECURRENCE T

1-6 DO YOU USE OR REFER TO DIFFERENTIATING CATEGORIES?
1PRF17 DO YOU USE OR REFER TO THESE RECURRENCE FREQUENCY

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328	328	328	328	328	328	328
55	55	55	55	55	55	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)

4.0	32.2	6.0	7.7	4.7	14.3	.0	12.6	7.7	.0
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	1960	1970	1980	1990	2000					
Population	10.5	27.1	49.3	66.4	3.2	12.8	.0	10.1	5.4	.0

Year	1955	1956	1957	1958	1959
1955	23.6	3.3	3.8	3.7	12.2
1956	23.6	3.3	3.8	3.7	12.2
1957	23.6	3.3	3.8	3.7	12.2
1958	23.6	3.3	3.8	3.7	12.2
1959	23.6	3.3	3.8	3.7	12.2

1.9	28.1	4.3	5.8	3.7	12.2	.0	11.1	7.1	.0
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	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2
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2.7	5.0	2.7	3.2	3.2	2.0	3.5	3.0
5.5	16.6	4.3	3.8	3.2	3.7	7.5	7.0

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Time (min)	Temperature (°C)	Flow Rate (ml/min)	Pressure (atm)	Wavelength (nm)	Concentration (mg/ml)
0.0	16.6	3.0	9.2	.0	8.5
5.0	16.6	3.0	9.2	.0	8.5
10.0	16.6	3.0	9.2	.0	8.5
15.0	16.6	3.0	9.2	.0	8.5
20.0	16.6	3.0	9.2	.0	8.5
25.0	16.6	3.0	9.2	.0	8.5
30.0	16.6	3.0	9.2	.0	8.5
35.0	16.6	3.0	9.2	.0	8.5
40.0	16.6	3.0	9.2	.0	8.5
45.0	16.6	3.0	9.2	.0	8.5
50.0	16.6	3.0	9.2	.0	8.5
55.0	16.6	3.0	9.2	.0	8.5
60.0	16.6	3.0	9.2	.0	8.5
65.0	16.6	3.0	9.2	.0	8.5
70.0	16.6	3.0	9.2	.0	8.5
75.0	16.6	3.0	9.2	.0	8.5
80.0	16.6	3.0	9.2	.0	8.5
85.0	16.6	3.0	9.2	.0	8.5
90.0	16.6	3.0	9.2	.0	8.5
95.0	16.6	3.0	9.2	.0	8.5
100.0	16.6	3.0	9.2	.0	8.5

1.4	13.1	4.3	3.8	2.6	7.7	.0	6.5	3.0	.0
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	6.7	29.1	6.5	5.1	4.2	11.2	.0	12.6	6.0	.0
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70.0	78.4	26.6	55.1	22.1	63.3	66.7	51.3	29.8	39.5
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19.8	71.4	19.0	50.6	14.2	54.1	52.4	41.2	20.2	35.0
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[illegible]

	65.8	21.2	50.0	14.7	63.8	65.1	49.2	21.4	29.6
..4	65.8	21.2	50.0	14.7	63.8	65.1	49.2	21.4	29.6

00	00.5	21.2	46.4	14.2	48.0	25.4	29.6	17.3	25.9
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MEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLES										
		304	304	304	305	328	328	328	328	328	328
N 839	M3-7 DO YOU USE OR REFER TO INTEGRATING CIRCUITS?	50	51	54	54	50	51	52	53	54	55
N 840	M3-8 DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT?	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
N 841	M3-9 DO YOU DETERMINE WHETHER AN LR OR RC CIRCUIT IS DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT AND OUTPUT CONFIGURATION?	29.1	65.8	21.2	44.9	15.3	48.5	41.3	34.2	22.0	25.9
		20.3	48.7	16.3	27.6	11.1	40.8	22.2	27.6	12.5	19.8
N 842	M3-10 DO YOU WORK WITH SQUARE WAVE GENERATOR SOLID STATE CIRCUITS?	13.7	31.2	13.0	19.2	7.4	23.0	14.3	10.1	4.8	11.1
N 843	M3-11 DO YOU WORK WITH RECTANGULAR WAVE GENERATOR SOLID STATE CIRCUITS?	36.3	63.8	16.8	37.2	18.4	56.1	30.2	92.2	18.5	43.2
N 844	M3-12 DO YOU WORK WITH TRIANGULAR (SAWTOOTH) WAVE GENERATOR SOLID STATE CIRCUITS?	20.9	45.2	9.2	21.2	11.6	53.9	11.1	28.1	10.7	24.7
N 845	M3-13 DO YOU WORK WITH RAMP (TRAPEZOIDAL) GENERATOR SOLID STATE CIRCUITS?	25.8	43.7	14.1	22.4	14.2	55.1	11.1	40.7	14.3	32.1
N 846	M3-14 DO YOU WORK WITH FUNCTION GENERATOR SOLID STATE CIRCUITS?	10.4	35.2	10.9	12.8	10.0	51.5	7.9	30.2	8.9	14.8
N 847	M3-15 DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS?	18.7	31.2	10.9	21.8	11.1	30.6	11.1	21.1	13.7	27.2
N 848	M3-16 DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING CIRCUITS?	30.2	62.3	16.8	39.1	12.6	52.0	17.5	28.1	14.3	27.2
		28.6	61.8	16.3	36.5	12.6	54.1	19.0	34.7	13.7	28.4
N 849	M3-17 DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS?	15.9	46.2	12.0	23.7	8.4	39.3	14.3	25.1	9.5	21.0
N 850	M3-18 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS?	29.7	60.3	15.2	38.5	13.2	52.6	31.7	33.2	14.9	27.2
N 851	M3-19 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS?	27.5	53.3	15.2	33.3	10.0	44.9	19.0	21.1	11.9	23.5
N 852	M3-20 DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS?	28.6	54.3	16.3	32.1	13.2	51.0	30.2	30.2	16.7	25.9
N 853	M3-21 DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS?	25.8	51.8	15.2	32.1	9.5	44.4	14.3	18.6	10.7	24.7

O TASK TITLES

0 877 01-24 DO YOU USE OR REFER TO PEAK POWER WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?

0 878 01-25 DO YOU USE OR REFER TO FREQUENCY STABILITY WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?

0 879 01-26 DO YOU USE OR REFER TO RESPONSE CURVES FOR BANDWIDTH FILTERS WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?

0 880 01-27 DO YOU CALCULATE PEAK POWER OR EFFECTIVE POWER OF SSB OR ISB TRANSMITTERS?

0 881 01-28 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB OR ISB TRANSMITTER SCHEMATIC DIAGRAMS?

0 882 01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB OR ISB RECEIVER SCHEMATIC DIAGRAMS?

0 883 01-30 DO YOU PERFORM AERONAUTIC STATION ASSESSMENT PROGRAMS (ASAP)?

0 884 02-1 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 03-1; IF YES, CONTINUE.

0 885 02-2 DO YOU INSPECT PULSE MODULATION SYSTEMS?

0 886 02-3 DO YOU CLEAN PULSE MODULATION SYSTEMS?

0 887 02-4 DO YOU ALIGN PULSE MODULATION SYSTEMS?

0 888 02-5 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS?

0 889 02-6 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM COMPONENTS?

0 890 02-7 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS?

0 891 02-8 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM COMPONENTS?

0 892 02-9 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM) PULSE MODULATION SYSTEMS?

0 893 02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM) PULSE MODULATION SYSTEMS?

0 894 02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM) PULSE MODULATION SYSTEMS?

0 895 02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) PULSE MODULATION SYSTEMS?

0 896 02-13 DO YOU WORK ON LINE PULSING MODULATION PULSE MODULATION SYSTEMS?

0 897 02-14 DO YOU WORK ON TIME DIVISION MULTIPLEXING (TDM) PULSE MODULATION SYSTEMS?

0 898 02-15 DO YOU WORK ON - DON'T KNOW WHICH TYPE OF MODULATION SYSTEM?

0 899 02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLY STAGE?

0 900 02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHOKES AND CHARGING DIODE STAGE?

0 901 02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORK STAGE?

0 902 02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMER STAGE?

0 903 02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATRON STAGE?

304	304	304	305	320	320	320	320	320	320	320
50	51	54	54	51	52	53	54	55	55	55
(M)	(P)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
23.6	23.6	42.4	1.3	56.3	10.7	9.5	6.5	11.3	19.0	
25.0	23.6	49.5	1.9	58.9	10.7	7.9	7.0	10.1	21.0	
21.4	16.1	24.5	1.3	23.7	7.7	7.9	4.5	4.0	12.3	
14.8	20.1	23.9	.0	32.1	7.7	6.3	2.0	6.0	9.9	
27.5	24.6	43.5	.0	57.9	9.2	7.9	5.0	10.1	22.2	
27.5	22.1	46.7	.0	57.9	10.2	7.9	8.0	9.5	21.0	
2.7	6.0	9.8	.0	7.9	.5	3.2	.5	1.8	2.5	
12.6	50.3	6.0	5.1	9.5	63.3	42.9	40.2	10.7	16.0	
9.3	46.7	4.3	3.2	8.4	60.2	28.6	31.7	8.9	14.8	
9.3	44.2	3.3	3.2	6.3	53.1	14.3	27.6	8.3	14.8	
8.2	45.7	3.3	2.6	6.3	58.2	22.2	33.2	8.3	14.8	
9.9	45.7	3.3	2.6	8.4	62.2	38.1	35.7	9.5	14.8	
8.8	43.7	3.3	2.6	7.4	54.6	33.3	26.6	8.3	13.6	
2.8	40.7	3.3	2.6	8.4	61.2	31.7	32.7	9.5	13.6	
7.7	42.7	3.3	1.9	7.9	55.6	33.2	25.1	8.3	13.6	
7.1	37.2	3.3	3.8	5.8	49.0	19.0	26.6	4.0	11.1	
6.6	30.7	1.6	.0	5.8	37.2	12.7	18.1	5.4	9.9	
4.9	21.6	1.6	.6	6.3	40.3	7.9	14.6	3.6	8.6	
8.8	27.6	3.3	1.3	6.8	37.8	11.1	9.0	3.0	7.4	
3.8	6.0	1.6	.0	3.7	12.2	7.9	6.0	2.4	9.9	
2.2	8.0	2.7	4.5	5.3	11.7	11.1	8.5	2.4	13.6	
2.7	11.1	.5	.0	2.1	19.4	14.3	12.6	3.6	2.5	
9.3	46.2	2.7	3.2	5.8	55.6	34.9	24.6	7.1	16.0	
3.8	22.6	1.1	1.3	3.7	45.4	6.3	8.0	3.6	4.9	
8.8	44.7	3.3	2.6	4.7	56.1	19.0	19.6	5.4	9.9	
2.2	33.7	2.7	2.6	4.7	45.9	19.0	16.6	6.0	11.1	
2.7	29.6	.0	.0	2.6	40.8	9.5	6.5	1.8	1.2	

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O	TSM	TITLES	704 (M)	3C4 51 (H)	304 54 (M)	305 54 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	
0	904	02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMER STAGE?	4.9	37.7	2.7	1.3	3.7	52.6	19.0	13.1	2.4	7.4
0	905	02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBE STAGE?	4.4	43.2	2.7	.0	4.2	54.1	31.7	15.6	5.4	8.6
0	906	02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIER STAGE?	7.1	46.7	2.7	1.3	5.8	54.6	36.5	28.1	5.4	14.8
0	907	02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTER STAGE?	6.2	33.2	3.3	1.9	6.3	47.4	33.3	24.6	6.0	12.3
0	908	02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIER STAGE?	7.7	44.7	2.7	1.3	6.3	56.1	30.2	23.1	6.0	13.6
0	909	02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTOR STAGE?	6.6	43.2	3.3	1.9	5.8	53.1	27.0	25.6	6.5	13.6
0	910	02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIER STAGE?	4.9	40.2	.0	2.6	3.7	52.0	20.6	25.6	3.0	3.7
0	911	02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIER STAGE?	3.8	32.7	.0	2.6	2.6	41.3	17.5	18.1	2.4	3.7
0	912	02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	7.1	39.7	2.7	4.5	5.3	61.7	41.3	36.7	10.1	11.1
0	913	02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	7.7	41.2	3.3	4.5	5.3	59.7	36.5	35.7	7.7	12.3
0	914	02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	9.3	49.2	3.8	4.5	4.7	61.7	41.3	36.2	10.1	13.6
0	915	02-32 DO YOU USE OR REFER TO PULSE SHAPE WHEN WORKING WITH PULSE MODULATION SYSTEMS?	9.3	50.3	3.3	3.8	5.8	57.7	30.2	31.7	7.7	12.3
0	916	02-33 DO YOU USE OR REFER TO PEAK POWER WHEN WORKING WITH PULSE MODULATION SYSTEMS?	7.1	49.2	3.3	3.8	6.3	58.7	41.3	30.2	8.3	12.3
0	917	02-34 DO YOU USE OR REFER TO AVERAGE POWER WHEN WORKING WITH PULSE MODULATION SYSTEMS?	6.6	47.7	3.3	3.8	6.3	58.2	39.7	27.6	6.5	12.3
0	918	02-35 DO YOU USE OR REFER TO DUTY CYCLE (DC) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	6.0	44.2	3.3	1.9	6.8	54.6	28.6	29.6	8.3	12.3
0	919	02-36 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)?	3.8	33.7	2.7	3.8	3.7	54.6	28.6	27.1	5.4	7.4
0	920	02-37 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)?	5.5	38.2	2.2	4.5	5.3	58.2	33.3	30.7	7.7	12.3
0	921	02-38 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS?	4.4	39.2	2.7	1.3	3.7	46.4	33.3	17.6	4.2	4.9
0	922	02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS?	2.8	45.2	3.3	2.6	5.8	55.1	39.7	27.1	9.3	12.3
0	923	02-40 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS?	2.8	44.2	3.8	2.6	5.8	54.6	38.1	27.6	8.3	12.3
0	924	03-1 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB? IF NO, GO TO ITEM PI-1; IF YES, CONTINUE.	40.1	81.9	53.3	.6	92.1	88.8	87.3	76.4	48.8	74.1
0	925	03-2 DO YOU INSPECT ANTENNAS?	31.3	77.4	42.4	.6	92.6	87.2	63.5	70.9	48.8	69.1
0	926	03-3 DO YOU CLEAN ANTENNAS?	25.3	66.8	34.8	.6	75.8	80.6	31.7	55.3	42.3	54.3
0	927	03-4 DO YOU PHYSICALLY ALIGN ANTENNAS?	25.8	59.8	25.5	.0	41.1	68.9	6.3	24.1	29.8	16.0
0	928	03-5 DO YOU ELECTRICALLY ALIGN ANTENNAS?	20.3	56.8	26.1	.0	37.9	60.7	30.2	10.6	29.8	19.8
0	929	03-6 DO YOU TROUBLESHOOT TO ANTENNAS?	30.8	72.4	45.1	.6	91.1	88.3	73.0	65.3	49.8	71.6
0	930	03-7 DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS?	24.7	55.8	26.6	.0	50.5	66.8	74.6	13.1	33.9	25.9
0	931	03-8 DO YOU REMOVE OR INSTALL ANTENNAS?	26.9	50.3	33.2	.6	90.5	87.2	12.7	69.3	50.0	65.4

D	TSK	TITLES	304 50 (M)	304 51 (P)	304 54 (M)	305 54 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)	
P	984	PI-16 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS?	16.5	34.7	17.4	3.8	24.7	23.5	22.2	16.6	6.0	13.6
P	985	PI-17 DO YOU MEASURE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES?	15.4	51.3	26.6	.0	60.5	33.2	31.7	22.1	6.0	34.6
P	986	PI-18 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES?	7.7	46.2	18.5	.0	34.2	21.4	22.2	11.1	3.0	14.0
P	987	PI-19 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS?	4.9	27.6	8.2	1.3	12.6	4.1	7.9	3.0	1.2	9.9
P	988	PI-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING MATCHING TRANSFORMERS?	17.6	37.2	20.7	3.2	20.5	18.9	15.9	9.5	3.0	24.7
P	989	PI-21 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING DELTA MATCHING?	2.2	17.1	3.8	.0	5.8	5.6	7.9	4.0	.6	7.4
P	990	PI-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES?	15.4	29.1	14.1	.6	18.4	14.8	7.9	8.5	3.6	11.1
P	991	PI-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES?	4.4	14.1	4.3	.6	4.7	7.1	3.2	2.0	1.8	2.5
P	992	PI-24 DO YOU USE OR REFER TO THE TERM CUT OFF FREQUENCY OF TRANSMISSION LINES?	10.4	11.6	8.2	2.6	7.4	7.7	14.3	9.0	1.2	8.6
P	993	PI-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K) OF TRANSMISSION LINES?	3.8	16.6	3.8	.6	3.2	3.1	6.3	4.0	.6	6.2
P	994	PI-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION LINES FOR PARTICULAR FREQUENCIES?	6.0	40.2	8.2	.6	13.7	10.7	12.7	5.5	.6	9.9
P	995	PI-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR ELECTRICAL LENGTHS FOR GIVEN FREQUENCIES?	7.7	38.2	7.6	.6	10.0	8.2	9.5	3.0	.0	2.5
P	996	PI-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH INCREASES?	7.1	36.7	10.3	.0	21.1	7.1	9.5	6.0	1.8	7.4
P	997	PI-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION LINES?	9.3	10.6	11.4	1.3	14.7	9.7	1.6	7.0	4.2	11.1
P	998	PI-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES?	9.3	27.1	9.8	.6	22.1	23.0	17.5	15.1	3.0	13.6
P	999	PI-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING STUB MATCHING?	7.7	30.2	3.8	1.3	15.3	9.7	7.9	4.5	1.8	7.4
P	1000	PI-1 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM P3-1; IF YES, CONTINUE.	43.4	26.1	12.0	1.3	4.7	71.9	77.8	59.3	30.4	24.7
P	1001	PI-2 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS?	40.1	25.6	8.2	.0	2.1	70.9	73.0	56.8	29.2	18.5
P	1002	PI-3 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS?	34.1	23.6	8.2	.0	2.1	61.2	50.8	45.7	24.4	17.3
P	1003	PI-4 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS?	23.1	1.5	1.6	.0	1.1	63.8	60.3	25.6	10.1	14.8
P	1004	PI-5 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS?	14.8	2.0	1.1	.0	1.1	26.5	57.1	11.6	5.4	13.6
P	1005	PI-6 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS?	24.7	22.1	6.0	.0	2.1	62.2	58.7	36.2	22.6	16.0
P	1006	PI-7 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES?	24.2	12.6	1.6	.0	.5	66.3	47.6	50.3	29.2	7.4
P	1007	PI-8 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS?	29.7	12.6	2.2	.0	.5	67.3	57.1	48.7	23.8	7.4
P	1008	PI-9 DO YOU REMOVE OR INSTALL DUMMY LOADS?	31.3	21.6	5.4	.0	1.6	67.9	55.6	51.8	19.0	17.3
P	1009	PI-10 DO YOU REMOVE OR INSTALL E BENDS?	9.3	3.0	.5	.0	.0	35.2	36.5	16.6	5.4	3.7
P	1010	PI-11 DO YOU REMOVE OR INSTALL H BENDS?	8.8	3.5	.5	.0	.0	35.2	38.1	15.1	4.2	4.9
P	1011	PI-12 DO YOU REMOVE OR INSTALL OTHER BENDS?	11.0	9.0	2.2	.0	.5	49.0	47.6	23.1	15.5	7.4

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D	TSK	TITLES	304 50 (M)	304 51 (M)	304 54 (M)	305 54 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)	
P1012	P2-13	DO YOU REMOVE OR INSTALL CHOKE JOINTS?	6.6	9.0	1.1	.0	.0	28.1	11.1	8.0	6.5	6.2
P1013	P2-14	DO YOU REMOVE OR INSTALL ROTATING JOINTS?	6.6	9.5	1.6	.0	.0	25.5	42.9	5.5	8.3	3.7
P1014	P2-15	DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS?	26.9	22.6	6.5	.0	2.1	57.7	52.4	43.2	19.0	13.6
P1015	P2-16	DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS?	12.1	19.1	1.1	.0	.5	44.4	25.4	17.1	7.1	7.4
P1016	P2-17	DO YOU REMOVE OR INSTALL DUPLEXERS OR MIXERS?	19.8	23.1	2.2	.0	1.1	57.7	31.7	25.1	16.1	11.1
P1017	P2-18	DO YOU REMOVE OR INSTALL WAVEGUIDE SHUTTERS?	14.3	9.5	.0	.0	.0	43.9	12.7	5.0	3.0	2.5
P1018	P2-19	DO YOU REMOVE OR INSTALL TRANSMIT (TRI) OR ANTITRANSMIT (ATI) TUNES?	7.8	6.5	1.6	.0	1.6	52.0	9.8	8.5	11.3	6.2
P1019	P2-20	DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES?	9.3	2.5	1.1	.0	.0	15.8	22.2	5.5	9.8	.0
P1020	P2-21	DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES?	9.3	2.0	1.1	.0	.0	15.8	23.8	5.5	9.8	.0
P1021	P2-22	DO YOU USE OR REFER TO CUT OFF FREQUENCY OF WAVEGUIDES?	17.0	3.0	2.2	.6	.0	17.9	20.6	12.1	9.2	.0
P1022	P2-23	DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES?	10.4	1.5	.5	.0	.0	17.3	17.5	6.0	9.8	.0
P1023	P2-24	DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES?	9.3	1.0	.5	.0	.0	15.8	17.5	6.0	3.6	.0
P1024	P2-25	DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS?	5.5	1.0	.5	.0	.0	8.7	11.1	3.0	1.8	.0
P1025	P2-26	DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS?	9.9	1.0	.5	.0	.0	9.7	12.7	3.0	1.8	1.2
P1026	P2-27	DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS?	9.4	9.5	.5	.0	.0	9.2	11.1	1.5	1.8	.0
P1027	P2-28	DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OR .7 WAVELENGTHS OF THE OPERATING FREQUENCY?	6.0	2.0	.5	.0	.0	9.7	7.9	6.0	3.0	.0
P1028	P2-29	DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 AS AN AVERAGE?	6.6	2.0	.5	.0	.0	8.7	6.3	4.0	1.8	.0
P1029	P2-30	DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION?	8.2	1.0	.5	.0	.5	8.2	1.6	2.5	1.2	.0
P1030	P2-31	DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES?	13.2	5.0	1.1	.0	.0	11.2	11.1	3.5	1.8	.0
P1031	P2-32	DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES?	2.2	2.0	1.1	.0	.0	9.6	9.8	.5	1.2	.0
P1032	P2-33	DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES?	1.6	2.0	.5	.0	.0	3.1	1.6	.5	1.2	.0
P1033	P2-34	DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES?	2.2	4.0	.5	.0	.0	3.1	3.2	.5	1.2	.0
P1034	P2-35	DO YOU WORK WITH HIGH POWER PROBE ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	14.8	8.5	1.1	.0	.5	33.2	39.7	11.1	2.4	3.7
P1035	P2-36	DO YOU WORK WITH LOW POWER PROBE ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	17.0	9.5	1.1	.0	1.1	30.6	20.6	8.0	3.6	2.5
P1036	P2-37	DO YOU WORK WITH LOOP ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	13.2	13.6	2.7	.0	.5	33.7	11.1	7.5	1.8	2.5
P1037	P2-38	DO YOU WORK WITH APERTURES (WINDOWS OR IRISES) ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	19.8	9.5	1.6	.0	.5	49.0	57.1	15.6	5.4	1.2
P1038	P2-39	DO YOU WORK WITH CHOKE JOINTS IN WAVEGUIDES OR CAVITY RESONATORS?	7.1	2.5	1.1	.0	.5	28.1	11.1	6.0	5.5	1.2

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D	TSK	TITLES	704 50 (H)	304 51 (H)	304 54 (H)	305 54 (H)	328 50 (H)	328 51 (H)	328 52 (H)	328 53 (H)	328 54 (H)	328 55 (H)
P1068	P3-25	DO YOU CLEAN PARAMETRIC AMPLIFIERS?	16.5	2.0	.0	.5	8.2	20.6	4.5	1.8	3.7	3.2
P1069	P3-26	DO YOU ADJUST PARAMETRIC AMPLIFIERS?	15.4	2.5	.0	.5	8.7	17.5	5.0	1.8	4.9	5.5
P1070	P3-27	DO YOU TUNE PARAMETRIC AMPLIFIERS?	15.4	2.5	.0	.5	8.7	15.9	5.0	1.8	3.7	4.9
P1071	P3-28	DO YOU PERFORM OPERATIONAL CHECKS ON PARAMETRIC AMPLIFIERS?	16.5	2.5	1.1	.0	.5	8.2	41.3	5.5	1.8	4.9
P1072	P3-29	DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS?	17.6	2.0	.5	.0	.5	7.7	41.3	5.0	1.8	4.9
P1073	P3-30	DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIER?	16.5	2.5	.5	.0	.5	8.7	39.7	5.0	1.8	4.9
P1074	P3-31	DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS?	12.1	1.5	.0	.0	.5	5.1	15.9	3.5	1.8	2.5
P1075	P3-32	DO YOU INSPECT MAGNETRONS?	3.3	1.5	.5	.0	.0	57.7	.0	21.6	12.5	.0
P1076	P3-33	DO YOU CLEAN MAGNETRONS?	3.3	1.5	.0	.0	.0	47.4	.0	17.6	9.5	.0
P1077	P3-34	DO YOU ADJUST MAGNETRONS?	3.3	1.5	.0	.0	.0	40.3	.0	17.6	12.5	.0
P1078	P3-35	DO YOU TUNE MAGNETRONS?	3.3	1.0	.0	.0	.0	41.8	.0	19.1	12.5	.0
P1079	P3-36	DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS?	3.3	1.5	.5	.0	.0	61.2	.0	22.1	13.1	.0
P1080	P3-37	DO YOU TROUBLESHOOT MAGNETRONS?	3.3	1.5	.0	.0	.0	55.1	.0	20.1	13.7	.0
P1081	P3-38	DO YOU REMOVE OR REPLACE COMPLETE MAGNETRONS?	2.7	1.5	.0	.0	.0	60.7	.0	22.6	13.1	.0
P1082	P3-39	DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS?	1.6	1.0	.0	.0	.0	13.3	.0	6.0	3.0	.0
P1083	P3-40	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF COLLECTOR PLATE COMPONENTS OF TWO-CAVITY KLYSTRONS?	15.4	6.5	.5	.0	.0	7.1	25.4	2.0	4.2	1.2
P1084	P3-41	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATCHER CAVITY COMPONENTS OF TWO-CAVITY KLYSTRONS?	13.7	5.5	.5	.0	.0	5.1	12.7	2.0	2.4	1.2
P1085	P3-42	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATCHER GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	14.3	5.0	.5	.0	.0	4.6	15.9	1.5	2.4	.0
P1086	P3-43	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FEEDBACK LOOP COMPONENTS OF TWO-CAVITY KLYSTRONS?	13.7	4.5	.5	.0	.0	6.6	22.2	3.0	3.0	1.2
P1087	P3-44	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF DIFT SPACE COMPONENTS OF TWO-CAVITY KLYSTRONS?	13.2	4.0	.5	.0	.0	4.6	14.3	2.0	1.2	.0
P1088	P3-45	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF BUNCHER GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	14.8	4.0	.5	.0	.0	3.6	9.5	1.5	1.2	1.2
P1089	P3-46	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF BUNCHER CAVITY COMPONENTS OF TWO-CAVITY KLYSTRONS?	14.8	4.0	.5	.0	.0	4.1	11.1	2.0	1.2	1.2
P1090	P3-47	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CONTROL GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	15.9	7.0	.5	.0	.0	8.2	22.2	2.5	3.0	1.2
P1091	P3-48	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF TWO-CAVITY KLYSTRONS?	15.4	7.0	.5	.6	.0	10.2	25.4	4.0	3.0	3.7
P1092	P3-49	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX (REFLECTOR) PLATE COMPONENTS OF REFLEX KLYSTRONS?	21.4	3.5	1.1	.0	.5	18.9	9.5	3.0	14.9	.0
P1093	P3-50	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF GRID COMPONENTS OF REFLEX KLYSTRONS?	20.3	6.5	1.1	.0	.5	17.9	19.0	3.5	11.3	1.2
P1094	P3-51	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF GRID CAVITY GAP COMPONENTS OF REFLEX KLYSTRONS?	14.3	5.0	.5	.0	.5	12.2	9.5	3.0	8.9	.0
P1095	P3-52	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF RESONANT CAVITY COMPONENTS OF REFLEX KLYSTRONS?	18.7	7.0	1.1	.0	.5	19.9	12.7	4.5	10.7	2.5
P1096	P3-53	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MAGNETIC COUPLING LOOP COMPONENTS OF REFLEX KLYSTRONS?	13.7	4.5	1.1	.0	.0	12.8	6.3	3.5	7.1	.0
P1097	P3-54	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FILAMENT COMPONENTS OF REFLEX KLYSTRONS?	20.9	6.0	1.1	.0	.5	19.9	17.5	5.5	10.7	1.2

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NO	TITLE	304 (H)	304 (P)	304 (M)	305 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)
P1108	P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF REFLEX KLYSTRONS?	21.4	6.0	1.1	.6	.5	20.4	27.0	5.5	11.3	1.2	1.2
P1109	P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF OUTPUT LOAD COMPONENTS OF REFLEX KLYSTRONS?	18.1	6.0	1.1	.0	.5	19.4	11.1	4.5	10.7	.0	.0
P1110	P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FILAMENT COMPONENTS OF TRAVELING-WAVE TUBES?	33.5	5.5	.5	.0	.0	9.7	38.1	34.2	3.0	3.7	3.7
P1111	P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF TRAVELING-WAVE TUBES?	34.1	5.5	.5	.0	.0	9.2	50.8	32.7	2.4	3.7	3.7
P1112	P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MODULATOR GRID COMPONENTS OF TRAVELING-WAVE TUBES?	29.7	3.0	.5	.0	.0	4.6	28.6	21.1	1.8	2.5	2.5
P1113	P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF ANODE COMPONENTS OF TRAVELING-WAVE TUBES?	33.5	5.0	.5	.0	.0	8.7	25.4	32.2	2.4	2.5	2.5
P1114	P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF HELIX COMPONENTS OF TRAVELING-WAVE TUBES?	34.1	2.5	.5	.0	.0	4.1	22.2	33.7	.0	2.5	2.5
P1115	P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF COLLECTOR COMPONENTS OF TRAVELING-WAVE TUBES?	34.1	4.0	.5	.0	.0	7.7	46.0	28.1	2.4	2.5	2.5
P1116	P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MAGNET COMPONENTS OF TRAVELING-WAVE TUBES?	29.7	2.5	.5	.0	.0	8.7	20.6	22.1	4.2	2.5	2.5
P1117	P3-64 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF ATTENUATOR COMPONENTS OF TRAVELING-WAVE TUBES?	31.3	3.5	.5	.6	.0	10.2	41.3	23.6	4.2	3.7	3.7
P1118	P3-65 DO YOU PERFORM TASKS ON FERRITE CIRCULATOR COMPONENTS OF PARAMETRIC AMPLIFIERS?	5.5	1.0	.0	.0	.5	2.0	4.8	2.0	1.2	2.5	2.5
P1119	P3-66 DO YOU PERFORM TASKS ON SIGNAL CAVITY COMPONENTS OF PARAMETRIC AMPLIFIERS?	7.7	1.5	.0	.0	.5	3.1	4.8	2.5	1.2	2.5	2.5
P1120	P3-67 DO YOU PERFORM TASKS ON IDLER CAVITY COMPONENTS OF PARAMETRIC AMPLIFIERS?	4.4	1.0	.0	.0	.5	1.5	3.2	2.0	.0	2.5	2.5
P1121	P3-68 DO YOU PERFORM TASKS ON VARACTOR DIODE COMPONENTS OF PARAMETRIC AMPLIFIERS?	12.1	1.5	.0	.0	.5	3.6	9.5	3.0	.6	2.5	2.5
P1122	P3-69 DO YOU PERFORM TASKS ON FERRITE ISOLATOR COMPONENTS OF PARAMETRIC AMPLIFIERS?	7.7	1.0	.0	.0	.5	3.1	4.8	2.5	1.2	2.5	2.5
P1123	P3-70 DO YOU PERFORM TASKS ON REVERSE-BIAS BATTERY COMPONENTS OF PARAMETRIC AMPLIFIERS?	3.8	.5	.0	.0	.0	2.6	3.2	1.5	.6	2.5	2.5
P1124	P3-71 DO YOU PERFORM TASKS ON ANODE COMPONENTS OF MAGNETRONS?	2.7	.5	.0	.0	.0	11.2	.0	8.0	1.2	.0	.0
P1125	P3-72 DO YOU PERFORM TASKS ON ANODE COOLING PIN COMPONENTS OF MAGNETRONS?	2.2	.5	.0	.0	.0	6.6	.0	3.0	.6	.0	.0
P1126	P3-73 DO YOU PERFORM TASKS ON COUPLING LOOP COMPONENTS OF MAGNETRONS?	2.2	.5	.0	.0	.0	8.7	.0	5.0	1.2	.0	.0
P1127	P3-74 DO YOU PERFORM TASKS ON HEATER LEAD COMPONENTS OF MAGNETRONS?	2.7	.5	.0	.0	.0	9.7	.0	7.5	3.0	.0	.0
P1128	P3-75 DO YOU PERFORM TASKS ON RESONANT CAVITY COMPONENTS OF MAGNETRONS?	2.7	.5	.0	.0	.0	14.8	.0	6.5	2.4	.0	.0
P1129	P3-76 DO YOU PERFORM TASKS ON CATHODE COMPONENTS OF MAGNETRONS?	2.7	.5	.0	.0	.0	13.8	1.6	9.0	1.2	.0	.0
P1130	P3-77 DO YOU PERFORM TASKS ON MAGNET COMPONENTS OF	2.7	.5	.0	.0	.0	12.7	.0	7.5	3.0	.0	.0

D TSK	TITLES											
	304	304	304	305	328	328	328	328	328	328	328	328
	50	51	54	54	50	51	52	53	54	55		
	(M)	(P)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)

Q REGISTERS (Q1), STORAGE DEVICES (Q2), DIGITAL-TO-ANALOG AND
ANALOG-TO-DIGITAL CONVERTERS (Q3)

Q1121 Q1-1 DO YOU USE OR REFER TO STORAGE REGISTERS?	29.1	24.1	29.9	79.5	22.1	22.4	66.7	34.7	29.8	58.0		
Q1122 Q1-2 DO YOU USE OR REFER TO SHIFT REGISTERS?	34.1	28.1	31.5	77.6	22.6	21.4	69.8	35.7	32.7	60.5		
Q1123 Q1-3 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS?	31.9	26.1	31.5	71.8	18.4	23.0	55.6	32.7	26.8	58.0		
Q1124 Q1-4 DO YOU USE OR REFER TO LOGIC SYMBOLS OR STORAGE REGISTERS?	29.1	23.6	29.3	71.8	19.5	21.9	55.6	32.7	25.6	55.6		
Q1125 Q1-5 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTER CIRCUITS?	30.8	23.6	29.3	71.2	14.2	17.3	57.1	29.6	22.6	46.9		
Q1126 Q1-6 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPES OF REGISTER CIRCUITS?	23.1	21.1	26.6	69.9	13.7	17.3	49.2	25.1	19.0	44.4		
Q1127 Q1-7 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES HAVE PASSED?	28.6	21.6	22.8	57.7	14.7	19.9	39.7	26.6	20.2	44.4		
Q1128 Q2-1 DO YOU WORK WITH STORAGE DEVICES IN YOUR PRESENT JOB? IF NO, GO TO ITEM Q3-1; IF YES, CONTINUE.	19.2	34.2	16.8	82.7	31.6	27.0	77.8	42.2	41.1	39.5		
Q1129 Q2-2 DO YOU USE OR REFER TO DELAY LINES?	5.5	30.2	6.5	32.1	6.3	26.5	63.5	20.6	9.5	7.4		
Q1130 Q2-3 DO YOU USE OR REFER TO MAGNETIC CORES OR BIMAGS?	2.2	8.0	4.3	64.1	23.2	5.6	42.9	11.1	23.2	8.6		
Q1131 Q2-4 DO YOU USE OR REFER TO MAGNETIC DRUMS?	2.7	1.5	2.2	26.3	12.6	3.6	20.6	6.5	13.7	4.9		
Q1132 Q2-5 DO YOU USE OR REFER TO MAGNETIC TAPES?	3.3	3.0	12.0	76.9	6.8	1.0	74.8	31.7	23.2	35.8		
Q1133 Q2-6 DO YOU USE OR REFER TO ACCESS TIME OR SPEED OF MEMORY SYSTEMS?	6.0	7.5	4.9	55.8	8.4	6.1	54.0	22.1	18.5	15.5		
Q1134 Q2-7 DO YOU USE OR REFER TO STORAGE CAPACITY OF MEMORY SYSTEMS?	12.1	11.6	7.1	74.4	15.3	5.1	69.4	26.1	25.0	30.9		
Q1135 Q2-8 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS?	5.5	6.5	3.3	54.7	11.1	2.6	71.4	16.1	21.4	28.4		
Q1136 Q2-9 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES?	6.6	18.1	6.0	35.9	5.3	14.3	50.8	13.1	11.3	8.6		
Q1137 Q2-10 DO YOU USE OR REFER TO MAGNETIC DISKS?	1.6	.5	3.3	48.7	3.7	1.0	3.2	20.6	8.9	6.2		
Q1138 Q2-11 DO YOU USE OR REFER TO THIN FILMS?	2.2	.5	2.2	10.9	3.2	.5	1.6	6.0	8.3	7.4		
Q1139 Q2-12 DO YOU USE OR REFER TO SEMICONDUCTOR MEMORY (INTEGRATED) CIRCUITS?	15.9	15.6	7.1	55.8	16.8	14.3	49.2	27.1	28.6	14.8		
Q1140 Q2-13 DO YOU USE OR REFER TO BUBBLE MEMORIES?	1.1	1.0	.5	2.6	3.2	1.5	.0	8.0	4.2	1.2		
Q1141 Q2-14 DO YOU USE OR REFER TO PUNCH CARDS?	1.6	1.5	2.7	39.1	2.6	1.5	3.2	5.0	4.2	17.3		
Q1142 Q2-15 DO YOU USE OR REFER TO PAPER TAPES?	4.4	10.1	2.7	28.8	3.2	2.0	60.3	28.6	10.7	19.8		
Q1143 Q2-16 DO YOU USE OR REFER TO RANDOM ACCESS MEMORIES (RAM)?	15.9	12.1	6.5	60.9	10.0	5.1	79.4	34.2	26.8	25.9		
Q1144 Q2-17 DO YOU USE OR REFER TO READ ONLY MEMORIES (ROM)?	14.8	12.6	8.2	57.7	12.1	4.6	81.0	36.7	26.2	29.6		
Q1145 Q2-18 DO YOU USE OR REFER TO PROGRAMMABLE READ ONLY MEMORIES (PROM)?	14.8	5.5	6.5	42.3	7.9	2.0	76.2	35.2	23.8	19.8		
Q1146 Q2-19 DO YOU USE OR REFER TO TRANSFORMER READ ONLY STORAGE (TROS)?	1.1	1.0	.5	7.1	1.6	1.0	3.2	1.0	5.4	6.2		
Q1147 Q2-20 DO YOU USE OR REFER TO CAPACITY READ ONLY STORAGE (CROS)?	.5	2.0	.5	6.4	1.6	1.0	1.6	.5	4.2	3.7		
Q1148 Q2-21 DO YOU INSPECT STORAGE DEVICES?	13.7	24.1	12.0	75.0	22.1	18.9	41.3	32.2	26.2	19.8		
Q1149 Q2-22 DO YOU CLEAN STORAGE DEVICES?	12.6	22.1	10.9	72.4	15.8	16.8	22.2	27.6	20.2	21.0		
Q1150 Q2-23 DO YOU ALIGN STORAGE DEVICES?	6.6	15.6	7.6	59.0	8.4	9.7	15.9	15.1	8.3	12.3		
Q1151 Q2-24 DO YOU ADJUST STORAGE DEVICES?	6.0	17.1	7.6	59.6	8.4	9.7	19.0	15.1	9.9	13.6		
Q1152 Q2-25 DO YOU TROUBLESHOOT MEMORY SYSTEM STORAGE DEVICES?	11.5	17.1	8.7	73.1	20.0	9.7	68.3	21.6	25.6	25.9		
Q1153 Q2-26 DO YOU REMOVE OR REPLACE SUBASSEMBLIES OR COMPONENTS OF STORAGE DEVICES?	14.3	18.6	9.2	69.2	18.9	9.7	50.8	21.6	23.2	24.7		

[illegible]

R P-ANTASTRONS (R1), SCHMITT TRIGGERS (R2), CABLE
FABRICATION (R3)

D TSK	TITLES	304 (M)	304 51 (M)	304 54 (M)	305 54 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
S1200	S1-13 DO YOU USE OR REFER TO TAPE READERS?										
S1201	S1-14 DO YOU USE OR REFER TO TAPE PUNCHES?										
S1202	S2-1 DO YOU WORK WITH PHOTO DIODE PHOTO SENSITIVE DEVICES?	3.3	10.1	8.2	37.2	2.6	3.6	58.7	42.7	24.4	49.4
S1203	S2-2 DO YOU WORK WITH PHOTO TRANSISTOR PHOTO SENSITIVE DEVICES?	2.2	10.1	5.4	25.6	1.6	1.5	41.3	13.6	3.6	22.2
		7.1	10.1	7.6	30.1	2.1	6.6	7.9	5.5	4.2	9.9
		5.5	7.0	5.4	18.6	1.6		7.9	4.5	3.6	
S1204	S2-3 DO YOU WORK WITH PHOTO TUBE PHOTO SENSITIVE DEVICES?										
S1205	S2-4 DO YOU WORK WITH PHOTO-SCR PHOTO SENSITIVE DEVICES?	3.8	1.0	1.6	12.8	2.1	.0	1.6	1.5	1.2	7.4
S1206	S2-5 DO YOU WORK WITH PHOTO CELL (PHOTO CONDUCTIVE OR PHOTO VOLTAIC) PHOTO SENSITIVE DEVICES?	2.2	2.5	2.2	1.9	1.1	3.1	.0	1.0	1.2	2.5
		6.6	13.1	15.8	36.5	1.6	6.1	6.3	8.0	7.7	9.9
S1207	S3-1 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS?										
	IF NO, GO TO ITEM T1-1; IF YES, CONTINUE.										
S1208	S3-2 DO YOU USE OR REFER TO EXCITATION FREQUENCY CHOPPER COIL ITEMS?	1.6	14.6	10.9	4.5	28.4	21.9	6.3	8.5	13.7	16.0
		1.6	8.0	4.9	3.2	14.7	13.8	6.3	6.0	10.7	7.4
S1209	S3-3 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIP CHOPPER COIL ITEMS?	2.7	5.5	9.2	3.2	18.4	15.8	4.8	6.0	8.9	11.1
S1210	S3-4 DO YOU MEASURE EXCITATION FREQUENCY CHOPPER COIL ITEMS?	1.6	5.0	2.7	1.9	8.9	10.7	1.6	4.5	7.1	6.2
S1211	S3-5 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIP CHOPPER COIL ITEMS?	2.2	4.5	4.3	3.2	12.1	13.3	1.6	3.0	6.0	7.4
S1212	S3-6 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	1.6	3.5	9.8	2.6	25.3	20.9	.0	5.0	7.7	9.9
S1213	S3-7 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	2.2	7.0	8.7	2.6	22.1	18.4	1.6	6.0	8.3	9.9
S1214	S3-8 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	2.2	4.5	10.9	3.8	24.7	21.4	1.6	5.0	9.5	14.8
S1215	S3-9 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	2.2	8.5	8.7	3.8	21.1	20.4	1.6	5.5	8.3	14.8

T	INFRARED (T1), LASERS (T2), DISPLAY TUBES (T3), TELEVISION (T4)										

T1216	T1-1 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS? IF NO, GO TO ITEM T2-1; IF YES, CONTINUE.	2.7	.0	.5	2.6	.0	.0	.0	5.5	3.0	2.5
T1217	T1-2 DO YOU INSPECT INFRARED SYSTEMS?	1.6	.0	.5	1.9	.0	.0	.0	4.0	1.2	2.5
T1218	T1-3 DO YOU CLEAN INFRARED SYSTEMS?	1.6	.0	.5	1.9	.0	.0	.0	3.5	1.8	1.2
T1219	T1-4 DO YOU SERVICE INFRARED SYSTEMS?	1.6	.0	.5	1.9	.0	.0	.0	4.5	1.2	1.2
T1220	T1-5 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS?	1.6	.0	.0	1.3	.0	.0	.0	1.5	1.2	1.2
T1221	T1-6 DO YOU OPERATE INFRARED SYSTEMS?	1.6	.0	.0	1.3	.0	.0	.0	3.0	1.8	2.5
T1222	T1-7 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS?	1.6	.0	.0	1.9	.0	.0	.0	3.5	1.2	2.5
T1223	T1-8 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS?	1.6	.0	.0	1.3	.0	.0	.0	2.5	1.2	2.5
T1224	T1-9 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS?	1.1	.0	.0	.6	.0	.0	.0	1.5	.6	2.5
T1225	T1-10 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS?	1.6	.0	.0	1.3	.0	.0	.0	2.5	1.2	1.2

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D TSK	TITLES	304 (M)	304 51 (M)	304 54 (M)	305 (M)	328 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
T1226	T1-11 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS?	1.1	.0	.0	.6	.0	.0	.0	.0	1.5	.6	2.5
T1227	T1-12 DO YOU USE OR REFER TO FAR REGIONS?	1.1	.0	.0	.0	.0	.0	.0	.0	1.0	.0	.0
T1228	T1-13 DO YOU USE OR REFER TO INTERMEDIATE REGIONS?	1.1	.0	.0	.0	.0	.5	.0	.0	1.0	.0	.0
T1229	T1-14 DO YOU USE OR REFER TO NEAR REGIONS?	1.1	.0	.0	.0	.0	.0	.0	.0	1.0	.0	.0
T1230	T1-15 DO YOU USE OR REFER TO MICPONS IM)?	.5	.0	.0	.0	.0	.5	.0	.0	2.0	.6	.0
T1231	T1-16 DO YOU USE OR REFER TO GRAY BODIES?	.0	.0	.0	.0	.0	.0	.0	.0	1.0	.6	.0
T1232	T1-17 DO YOU USE OR REFER TO BLACK BODIES?	.0	.0	.0	.0	.0	.0	.0	.0	2.0	.6	.0
T1233	T1-18 DO YOU USE OR REFER TO ABSORPTION?	.5	.0	.0	.0	.0	.5	.0	.0	2.0	.6	.0
T1234	T1-19 DO YOU USE OR REFER TO SCATTERING?	.5	.0	.0	.0	.0	.0	.0	.0	1.5	.6	.0
T1235	T1-20 DO YOU USE OR REFER TO ABSOLUTE ZERO?	.5	.0	.0	.0	.0	.0	.0	.0	2.0	.6	1.2
T1236	T1-21 DO YOU PERFORM TASKS ON BLITZ?	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1237	T1-22 DO YOU PERFORM TASKS ON TARGET BUTTONS?	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.2
T1238	T1-23 DO YOU PERFORM TASKS ON ERECTOR LENSES?	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1239	T1-24 DO YOU PERFORM TASKS ON OCULAR LENSES?	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1240	T1-25 DO YOU PERFORM TASKS ON CORRECTION LENSES?	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1241	T1-26 DO YOU PERFORM TASKS ON FILTERS?	.5	.0	.0	.0	.0	.0	.5	.0	.0	.0	1.2
T1242	T1-27 DO YOU PERFORM TASKS ON SPHERICAL MIRRORS?	.0	.0	.0	.6	.0	.0	.0	.0	.5	.6	.0
T1243	T1-28 DO YOU PERFORM TASKS ON PLANE MIRRORS?	.0	.0	.0	.6	.0	.0	.0	.0	.5	.6	.0
T1244	T2-1 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS? IF NO, GO TO ITEM T3-1; IF YES, CONTINUE.	3.3	.0	2.2	3.2	.0	.5	.0	.0	.0	.6	.0
T1245	T2-2 DO YOU INSPECT LASER SYSTEMS?	2.7	.0	2.2	1.9	.0	.0	.0	.0	.0	.0	.0
T1246	T2-3 DO YOU CLEAN LASER SYSTEMS?	2.7	.0	2.2	1.9	.0	.0	.0	.0	.0	.0	.0
T1247	T2-4 DO YOU SERVICE LASER SYSTEMS?	2.7	.0	2.2	1.9	.0	.0	.0	.0	.0	.0	.0
T1248	T2-5 DO YOU OPERATE LASER SYSTEMS?	2.2	.0	1.6	1.9	.0	.0	.0	.0	.0	.0	.0
T1249	T2-6 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS?	2.2	.0	2.2	1.9	.0	.0	.0	.0	.0	.6	.0
T1250	T2-7 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS?	2.2	.0	2.2	1.9	.0	.0	.0	.0	.0	.0	.0
T1251	T2-8 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS?	1.6	.0	2.2	1.3	.0	.0	.0	.0	.0	.0	.0
T1252	T2-9 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS?	2.7	.0	2.2	1.9	.0	.0	.0	.0	.0	.0	.0
T1253	T2-10 DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS?	1.1	.0	1.1	1.3	.0	.0	.0	.0	.0	.0	.0
T1254	T2-11 DO YOU USE OR REFER TO ANGSTROMS IAI7	1.6	.0	.0	1.9	.0	.0	.0	.0	.0	.0	.0
T1255	T2-12 DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS?	1.6	.0	.0	.6	.0	.0	.0	1.6	.0	.0	.0
T1256	T2-13 DO YOU USE OR REFER TO GROUND STATE?	1.1	.0	.5	.6	.0	.0	.0	.0	.0	.0	.0
T1257	T2-14 DO YOU USE OR REFER TO EXCITED STATE?	1.1	.0	.5	.6	.0	.0	.0	.0	.0	.0	.0
T1258	T2-15 DO YOU USE OR REFER TO PACKET OF RADIATION?	.5	.0	.5	.6	.0	.0	.0	.0	.0	.0	.0
T1259	T2-16 DO YOU USE OR REFER TO PHOTONS?	1.6	.0	1.1	.6	.0	.0	.0	.0	.0	.0	.0
T1260	T2-17 DO YOU USE OR REFER TO SPONTANEOUS EMISSIONS?	1.6	.0	.5	.6	.0	.0	.0	.0	.0	.0	.0
T1261	T2-18 DO YOU USE OR REFER TO STIMULATED EMISSIONS?	1.6	.0	.5	.6	.0	.0	.0	.0	.0	.0	.0
T1262	T2-19 DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE?	1.6	.0	.5	1.3	.0	.0	.0	.0	.0	.0	.0
T1263	T2-20 DO YOU USE OR REFER TO INVERSION LEVELS?	1.1	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
T1264	T2-21 DO YOU USE OR REFER TO MONOCHROMATIC?	1.1	.0	.0	.6	.0	.0	.0	.0	.0	.0	.0
T1265	T2-22 DO YOU WORK WITH ACTIVE MATERIALS?	.5	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
T1266	T2-23 DO YOU WORK WITH PUMPING SOURCES?	.5	.0	.5	1.7	.0	.0	.0	.0	.0	.0	.0
T1267	T2-24 DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS?	.5	.0	.0	1.9	.0	.0	.0	.0	.0	.0	.0

D TSK	TITLES	304 (M)	304 51 (M)	304 54 (M)	305 54 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)	328 55 (M)
T11268	12-25 DO YOU WORK WITH HALF SILVERED 1924 REFLECTIVE MIRRORS?	.0	.0	.0	1.3	.0	.0	.0	.0	.0	.0
T11269	12-26 DO YOU WORK WITH MELICAL FLASHTUBES?	.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
T11270	12-27 DO YOU WORK WITH RUBY MATERIALS?	.0	.0	.0	.6	.0	.0	.0	.0	.0	.0
T11271	12-28 DO YOU WORK WITH HELIUM-NEON MATERIALS?	.5	.0	.5	.0	.0	.0	.0	.0	.0	1.2
T11272	12-29 DO YOU WORK WITH HELIUM-XENON MATERIALS?	.5	.0	.0	.0	.0	.0	.0	.0	.0	1.2
T11273	12-30 DO YOU WORK WITH XENON MATERIALS?	.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
T11274	12-31 DO YOU WORK WITH CESIUM-HELIUM MATERIALS?	.5	.0	.0	.0	.0	.0	.0	.0	.0	1.2
T11275	12-32 DO YOU WORK WITH ARGON MATERIALS?	.5	.0	.0	1.3	.0	.0	.0	.0	.0	.0
T11276	12-33 DO YOU WORK WITH NEODYMIUM IN GLASS MATERIALS?	.5	.0	.0	.0	.0	.0	.0	.0	.0	1.2
T11277	12-34 DO YOU WORK WITH GALLIUM ARSENIDE MATERIALS?	1.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
T11278	13-1 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE TUBES (DVST), MULTIPLE MODE STORAGE TUBES (MMST), OR SCAN CONVERTER TUBES (SCT)? IF NO, GO TO ITEM 14-1; IF YES, CONTINUE.	2.7	1.0	1.1	4.5	2.1	22.4	1.6	.5	4.2	6.2
T11279	13-2 DO YOU INSPECT DVST OR MMST?	1.1	.5	1.1	3.8	.5	20.4	1.6	.5	1.8	3.7
T11280	13-3 DO YOU CLEAN DVST OR MMST?	1.6	.5	1.1	3.8	.5	19.4	1.6	.5	1.8	2.5
T11281	13-4 DO YOU ADJUST OR CALIBRATE DVST OR MMST?	.5	.5	1.1	3.2	.0	18.4	.0	.0	.0	.0
T11282	13-5 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST?	1.1	.5	.0	2.6	1.1	23.0	1.6	.5	3.0	4.9
T11283	13-6 DO YOU TROUBLESHOOT DVST OR MMST CIRCUITS?	.5	.5	.0	2.6	.5	17.9	1.6	.0	.6	1.2
T11284	13-7 DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM MAJOR ASSEMBLIES OR UNITS?	.5	.5	.0	2.6	.5	20.4	1.6	.0	.6	2.5
T11285	13-8 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF DVST?	.5	.5	.0	1.3	.0	16.8	.0	.0	1.2	3.7
T11286	13-9 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF MMST?	.5	.5	.0	.0	.0	.5	.0	.0	.0	2.5
T11287	13-10 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF SCT?	.5	1.0	.0	.0	.0	2.0	.0	.0	.0	2.5
T11288	13-11 DO YOU PERFORM TASKS ON FLOOD GUNS?	.5	.0	.0	1.9	.0	12.2	.0	.0	.6	1.2
T11289	13-12 DO YOU PERFORM TASKS ON WRITE GUNS?	.0	.0	.0	.6	.0	7.7	.0	.0	.6	1.2
T11290	13-13 DO YOU PERFORM TASKS ON READ GUNS?	.5	.0	.0	.0	.0	2.0	.0	.0	.6	1.2
T11291	13-14 DO YOU PERFORM TASKS ON ATTACK GUNS?	.5	.0	.0	.0	.0	1.0	.0	.0	.6	1.2
T11292	13-15 DO YOU PERFORM TASKS ON ERASE GUNS?	.5	.0	.0	.6	.0	10.2	.0	.0	.6	1.2
T11293	13-16 DO YOU PERFORM TASKS ON STORAGE GRIDS?	.5	.0	.0	.6	.0	7.7	.0	.0	.6	2.5
T11294	14-1 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS DEALING WITH TELEVISION SYSTEMS INCLUDING LOW LIGHT TELEVISION?	19.8	1.5	3.8	3.2	2.1	.5	4.8	1.5	3.6	2.5
T11295	IF NO, GO TO ITEM 14-1; IF YES, CONTINUE.										
T11296	14-2 DO YOU INSPECT TELEVISION SYSTEMS?	19.2	1.0	3.3	3.2	1.6	.5	1.6	1.5	1.2	2.5
T11297	14-3 DO YOU CLEAN TELEVISION SYSTEMS?	19.2	.5	3.3	3.2	1.6	.5	1.6	1.5	1.2	1.2
T11298	14-4 DO YOU ADJUST OR CALIBRATE TELEVISION SYSTEMS?	19.2	.5	2.7	3.2	2.1	.5	.0	1.0	1.2	1.2
T11299	14-5 DO YOU OPERATE TELEVISION SYSTEMS?	15.9	1.0	2.7	3.2	2.1	.5	4.8	1.5	3.0	2.5
T11299	14-6 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF TV SYSTEMS?	18.1	.5	2.7	3.2	2.1	.0	.5	1.0	1.2	1.2
T11300	14-7 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF TV SYSTEMS?	18.1	.5	2.2	3.2	.5	.5	.0	1.0	1.2	.0
T11301	14-8 DO YOU TROUBLESHOOT DOWN TO TV SYSTEM COMPONENT PARTS?	17.6	.0	1.6	3.2	.5	.0	.0	1.0	.0	.0
T11302	14-9 DO YOU REMOVE OR REPLACE TV SYSTEM MAJOR ASSEMBLIES?	18.7	.5	2.7	3.2	.5	.5	.0	1.0	1.2	.0
T11303	14-10 DO YOU REMOVE OR REPLACE TV SYSTEM COMPONENT PARTS?	18.1	.5	1.6	3.2	.5	.0	.0	.5	.6	.0

D TSM		TITLES	
204	304	304	320
50	54	54	55
(M)	(M)	(M)	(M)
305	320	320	320
50	51	52	53
(M)	(M)	(M)	(M)
320	320	320	320
54	54	54	54
(M)	(M)	(M)	(M)

U COMPUTERS, MICROPROCESSORS, AND PROGRAMMING (U1), DB AND POWER RATIOS (U2)

KESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	304 50 (M)	304 51 (M)	304 54 (M)	305 54 (M)	328 50 (M)	328 51 (M)	328 52 (M)	328 53 (M)	328 54 (M)
U1340	UI-37 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER MONITOR SECTIONS?	3.3	4.5	4.3	48.1	2.1	3.6	42.9	12.1	16.1
U1341	UI-38 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER TRANSMIT SECTIONS?	3.8	6.0	2.7	46.2	3.2	3.1	36.5	11.1	13.1
U1342	UI-39 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER RECEIVE SECTIONS?	3.8	6.0	3.3	45.5	3.2	3.6	36.5	11.6	13.7
U1343	UI-40 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER INPUT DEVICES?	6.6	8.5	4.3	69.2	3.7	3.6	49.2	16.1	23.2
U1344	UI-41 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER STORAGE DEVICES?	7.1	8.5	3.3	64.7	2.6	3.6	49.2	16.1	21.4
U1345	UI-42 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER OUTPUT DEVICES?	6.6	8.5	3.8	68.6	3.2	3.6	49.2	16.1	23.8
U1346	UI-43 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER POWER DEVICES?	3.8	4.5	3.3	59.6	2.6	3.6	44.4	11.1	16.1
U1347	UI-44 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER MONITOR DEVICES?	4.9	5.5	3.8	54.5	2.6	2.0	42.9	12.1	16.7
U1348	UI-45 DO YOU USE FORTRAN PROGRAMMING LANGUAGE?	.0	1.0	1.1	9.0	.5	.5	3.2	4.0	.6
U1349	UI-46 DO YOU USE COBOL PROGRAMMING LANGUAGE?	.0	1.5	2.2	1.9	.0	.5	1.6	1.0	.6
U1350	UI-47 DO YOU USE RPG PROGRAMMING LANGUAGE?	.0	.0	.0	1.3	.5	.5	1.6	1.0	.0
U1351	UI-48 DO YOU USE OR PERFORM TASKS ON MICROPROCESSOR BASED EQUIPMENT?	8.2	5.0	2.2	30.8	1.6	2.6	36.5	18.6	10.1
U1352	UI-49 DO YOU USE INPUT PORT LATCH CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	8.8	1.5	1.6	17.9	1.1	.0	31.7	7.5	6.0
U1353	UI-50 DO YOU USE OUTPUT PORT LATCH CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	8.8	1.0	1.1	17.9	1.1	.0	31.7	7.5	6.5
U1354	UI-51 DO YOU USE RAM MEMORY CIRCUITS (STATIC OR DYNAMIC) IN CONJUNCTION WITH THE MICROPROCESSOR?	11.0	5.5	3.3	34.0	1.6	.5	42.9	19.6	10.1
U1355	UI-52 DO YOU USE ROM MEMORY CIRCUITS (INCLUDES PROM, EPROM, ETC.) IN CONJUNCTION WITH THE MICROPROCESSOR?	11.0	5.5	3.3	32.7	1.1	1.0	44.4	19.1	9.5
U1356	UI-53 DO YOU USE TRI-STATE CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	4.4	1.0	.0	11.5	.0	.0	22.2	6.5	5.4
U1357	UI-54 DO YOU USE CLOCK GENERATOR CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	10.4	5.0	3.3	32.7	1.6	4.1	44.4	15.1	10.1
U1358	UI-55 DO YOU USE STATUS LATCH CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	4.4	1.0	1.1	19.9	1.1	.0	27.0	8.5	7.1
U1359	UI-56 DO YOU USE BIDIRECTIONAL BUFFER CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	6.6	1.5	1.6	26.3	.5	1.5	30.2	10.6	6.5
U1360	UI-57 DO YOU USE ENCODER/DECODER CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	10.4	5.5	2.7	31.4	1.6	4.1	36.5	16.6	10.1
U1361	UI-58 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION?	70.9	69.8	72.3	19.9	66.8	73.0	71.4	73.4	25.0
U1362	UI-59 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS?	35.2	22.1	16.8	1.9	13.2	18.4	23.8	18.6	3.0
U1363	UI-60 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS?	31.9	21.1	16.8	1.9	11.6	19.4	23.8	18.1	3.0
U1364	UI-61 DO YOU USE VTVM (DB METERS) TO CHECK FOR NOISE OR SIGNAL LEVEL?	64.7	59.8	74.5	22.4	67.9	67.9	44.4	45.2	26.8
U1365	UI-62 DO YOU USE VTVM (DB METERS) TO CHECK OR ADJUST AUDIO AMPLIFIERS?	61.0	49.7	72.3	12.2	66.8	60.2	19.0	22.6	18.5

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM TITLES

U1366 U2-6 DO YOU USE A HP3550 OR 344A TEST SET TO ALIGN AUDIO EQUIPMENT?

304	304	304	305	328	328	328	328	328	328
50	51	54	54	50	51	52	53	54	55
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)

42.4	15.1	32.1	3.2	22.1	23.0	4.8	6.5	1.8	40.7
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KEESLER EPI CAREER LADDERS, ELECTRONIC PRINCIPLES INVENTORY (EPI) DATA ARE PRESENTED BELOW EACH DUTY TITLE. DATA FOR THIS PRINTOUT WERE COLLECTED FROM CAREER LADDER INCUMBENTS DURING THE PERIOD DECEMBER 1982 THROUGH JULY 1983.

USE OF EPI PRINTOUT: THE PERCENT OF VARIOUS CAREER LADDER GROUPS RESPONDING TO EPI QUESTIONS IS LISTED TO THE RIGHT OF EACH EPI ITEM. THUS, THE APPROPRIATE SAMPLE CRITERION GROUPS CAN BE IDENTIFIED WITH THE COLUMN HEADINGS AT THE TOP RIGHT OF EACH PRINTOUT PAGE. THEN THE PERCENT OF THAT GROUP USING THE CONCEPT OR PIECE OF EQUIPMENT CAN BE IDENTIFIED.

USE OF EPI DATA: THESE DATA MAY BE USED IN HELPING TO IDENTIFY, DELINEATE, AND VALIDATE ELECTRONIC PRINCIPLES ITEMS IN THE SYS. CRITERIA LISTED IN ATCR 52-22 FOR ABR TRAINING MAY BE USEFUL IN HELPING DEVELOP ENTRY-LEVEL ELECTRONIC PRINCIPLE COURSES. ALSO, CDC WRITERS MAY USE EPI DATA TO HELP DETERMINE AREAS TO EMPHASIZE IN 5- AND 7-SKILL LEVEL CDS, CONSISTENT WITH SYS CODES.

FOR ASSISTANCE IN USING PRINTOUTS PHONE USAFOMC/DHMO, AUTOVON 487-5811.

VECTOR TYPE CODES:

- (T) = % TIME SPENT BY ALL MEMBERS
- (M) = % MEMBERS PERFORMING
- (F) = TASK FACTOR
- (D) = DICHOTOMOUS SET
- (B) = % TIME SPENT BY MEMBERS PERFORMING
- (-) = PROGRAM GENERATED VECTOR

NO	TYPE	VECTOR	/MEMBERS/		DESCRIPTION	FACTOR #
			MEAN	SD		
1	M	205 50	192		DAFSC 20550 AIRMEN	29
2	M	307 50	177		DAFSC 30750 AIRMEN	39

KEESLER EPI CAREER LADDERS, ELECTRONIC PRINCIPLES INVENTORY (EPI) DATA ARE PRESENTED BELOW EACH DUTY TITLE. DATA FOR THIS PRINTOUT WERE COLLECTED FROM CAREER LADDER INCUMBENTS DURING THE PERIOD DECEMBER 1982 THROUGH JULY 1983.

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USE OF EPI DATA: THESE DATA MAY BE USED IN HELPING TO IDENTIFY, DELINEATE, AND VALIDATE ELECTRONIC PRINCIPLES ITEMS IN THE STS. CRITERIA LISTED IN ATCR 52-22 FOR ABR TRAINING MAY BE USEFUL IN HELPING DEVELOP ENTRY-LEVEL ELECTRONIC PRINCIPLE COURSES. ALSO, CDC WRITERS MAY USE EPI DATA TO HELP DETERMINE AREAS TO EMPHASIZE IN 5- AND 7-SKILL LEVEL CDS, CONSISTENT WITH STS CODES.

FOR ASSISTANCE IN USING PRINTOUTS PHONE USAFOMC/DMD, AUTOVON 487-5811.

205 307
50 50
(M) (M)

D TSK TITLES

A MATHEMATICS (A1), DIRECT CURRENT (A2), RESISTANCE AND RESISTIVE CIRCUITS (A3)

A 1 A1-1 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METERS OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10?

39.6 67.8

A 2 A1-2 DO YOU USE PUBLICATIONS, SUCH AS TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY FOR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB?

28.5 41.8

A 3 A1-3 DO YOU REARRANGE AND SOLVE FORMULAS OR EQUATIONS?

40.1 41.2

A 4 A1-4 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY?

14.6 10.7

A 5 A1-5 DO YOU SOLVE FOR UNKNOWN QUANTITIES SUCH AS SOLVING FOR X IN THE EQUATION $x + 6 = 8$?

22.4 32.8

A 6 A1-6 DO YOU USE LOGARITHM TABLES?

10.4 37.9

A 7 A1-7 DO YOU SOLVE QUADRATIC EQUATIONS SUCH AS SOLVING FOR X IN THE EQUATION $x^2 + 4x + 4 = 0$?

7.8 9.6

A 8 A1-8 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES?

6.8 5.6

A 9 A1-9 DO YOU USE TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT?

13.5 6.8

A 10 A1-10 DO YOU SOLVE OR USE PROPORTIONS? AN EXAMPLE OF A PROPORTION IS $2 : 5 :: 4 : 10$. ANOTHER WAY TO EXPRESS THE SAME RELATIONSHIP IS $2/5 = 4/10$. SOMETIMES, ONE OF THE QUANTITIES IS UNKNOWN AND HAS TO BE SOLVED FOR, SUCH AS $2 : x :: 4 : 10$ (X IN THIS CASE IS UNKNOWN).

20.3 18

A 11 A1-11 DO YOU USE MATHEMATICAL EXPONENTS OR SUBSCRIPTS IN OTHER THAN POWERS OF 10?

17.2 15.3

A 12 A2-1 DO YOU USE (PERHAPS IN TECHNICAL ORDERS) THE TERM VOLTAGE OR VOLT (V)?

46.9 87.0

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPTC2 PAGE 3

D TSK	TITLES	205 SD (M)	307 SD (P)
A 13	A2-2 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM ELECTROMOTIVE FORCE (EMF)?	7.8	10.7
A 14	A2-3 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM OHM?	17.2	84.7
A 15	A2-4 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM ION?	2.1	9.6
A 16	A2-5 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM DYNE?	2.1	5.6
A 17	A2-6 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM AMPERE?	18.8	70.6
A 18	A2-7 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM NEUTRON?	2.6	6.2
A 19	A2-8 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM COULOMB?	2.1	3.4
A 20	A2-9 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM PROTON?	3.1	7.9
A 21	A2-10 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM ELECTRON?	7.8	16.9
A 22	A2-11 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM CURRENT?	23.4	75.1
A 23	A2-12 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM WATTAGE?	20.8	59.3
A 24	A2-13 DO YOU DETERMINE IF TWO OR MORE BATTERIES MUST BE CONNECTED IN SERIES OR PARALLEL TO ACHIEVE A SPECIFIC VOLTAGE AND/OR CURRENT?	2.1	18.1
A 25	A3-1 DO YOU WORK WITH RESISTORS OR RESISTIVE CIRCUITS IN YOUR PRESENT JOB? IF NO, GO TO ITEM B1-1; IF YES, CONTINUE.	3.6	28.2
A 26	A3-2 DO YOU INSPECT RESISTORS?	.0	7.9
A 27	A3-3 DO YOU CLEAN RESISTORS?	.0	1.7
A 28	A3-4 DO YOU ADJUST RESISTORS?	.0	9.6

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPT02 PAGE

4

D TSM	TITLES	205	307
		50 (M)	50 (M)
A 29	A3-5 DO YOU MEASURE RESISTORS?	1.0	18.6
A 30	A3-6 DO YOU USE OR REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASK YOU PERFORM?	.0	3.4
A 31	A3-7 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY CARBON?	.5	5.1
A 32	A3-8 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY FIXED WIRE?	.5	11.3
A 33	A3-9 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY SLIDE TAP?	.5	8.5
A 34	A3-10 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY RHEOSTAT?	.5	10.2
A 35	A3-11 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY POTENTIOMETER?	1.0	18.6
A 36	A3-12 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY FIXED FILM?	.5	1.1
A 37	A3-13 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE?	.5	11.3
A 38	A3-14 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE?	.5	10.7
A 39	A3-15 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE?	.5	5.6
A 40	A3-16 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES?	2.1	19.8
A 41	A3-17 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	2.1	19.2
A 42	A3-18 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	1.6	15.3
A 43	A3-19 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	1.6	11.9

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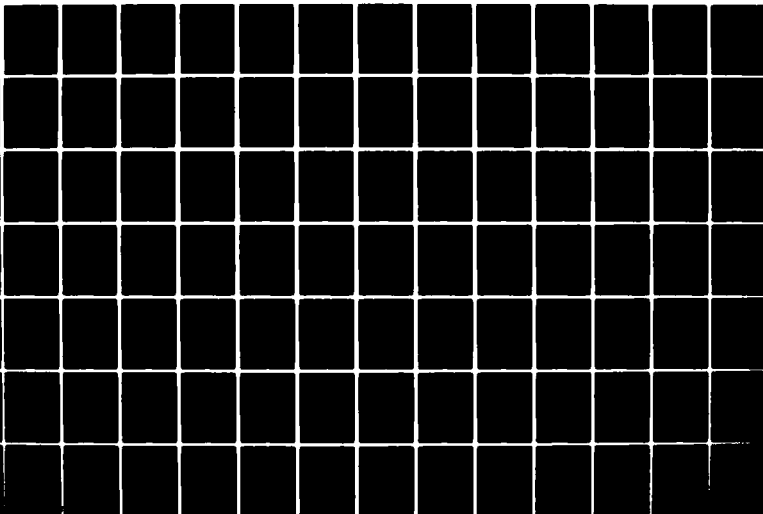
ELECTRONIC PRINCIPLES INVENTORY KEESLER TECHNICAL
TRAINING CENTER(U) AIR FORCE OCCUPATIONAL MEASUREMENT
CENTER RANDOLPH AFB TX M THOMASSON APR 84

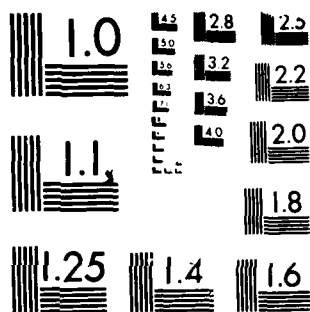
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

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D TSM TITLES

A 44	A3-20 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	1.6	10.2
A 45	A3-21 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	2.6	19.2
A 46	A3-22 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	1.6	16.4
A 47	A3-23 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	1.6	11.3
A 48	A3-24 DO YOU USE OR REFER TO INDIVIDUAL BRANCH CURRENT PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	1.6	9.0
A 49	A3-25 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	2.1	11.3
A 50	A3-26 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	2.6	15.8
A 51	A3-27 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	1.6	13.6
A 52	A3-28 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	1.6	9.0
A 53	A3-29 DO YOU USE OR REFER TO INDIVIDUAL BRANCH CURRENT PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	1.6	7.9
A 54	A3-30 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	1.6	9.0
A 55	A3-31 DO YOU CALCULATE TOTAL RESISTANCE PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	1.6	13.6
A 56	A3-32 DO YOU CALCULATE TOTAL CURRENT PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	.5	11.3
A 57	A3-33 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	.5	7.3

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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205 307
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(M) (M)

O TSK TITLES

A 58 A3-34 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENT PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?

.5 7.3

A 59 A3-35 DO YOU CALCULATE POWER DISSIPATION PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?

.5 7.9

B METERS/MULTIMETERS (B1), ALTERNATING CURRENT (AC) (B2), INDUCTORS AND INDUCTIVE REACTANCE (B3)

B 60 B1-1 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE RESISTANCE?

1.6 48.6

B 61 B1-2 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE VOLTAGE?

9.9 77.4

B 62 B1-3 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE CURRENT?

3.6 58.2

B 63 B1-4 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE POWER?

7.8 53.7

B 64 B1-5 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE FREQUENCY?

26.6 80.8

B 65 B1-6 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE TEMPERATURE?

3.1 8.5

B 66 B1-7 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE PRESSURE?

1.6 3.4

B 67 B1-8 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE LIGHT LEVELS?

1.0 2.8

B 68 B2-1 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM EFFECTIVE VOLTAGE (RMS) IN YOUR PRESENT JOB?

12.0 49.7

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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205 307
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0 TSM TITLES

8 69 82-2 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM PEAK TO PEAK VOLTAGE IN YOUR PRESENT JOB?

8 70 82-3 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM AVERAGE VOLTAGE (RMS) IN YOUR PRESENT JOB?

8 71 82-4 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM WAVE LENGTH IN YOUR PRESENT JOB?

8 72 82-5 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM FREQUENCY IN YOUR PRESENT JOB?

8 73 82-6 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM INSTANTANEOUS VALUE IN YOUR PRESENT JOB?

8 74 82-7 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM PHASE RELATIONSHIPS IN YOUR PRESENT JOB?

8 75 83-1 DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKE COILS IN YOUR PRESENT JOB? IF NO, GO TO ITEM C1-1; IF YES, CONTINUE.

8 76 83-2 DO YOU INSPECT INDUCTORS?

8 77 83-3 DO YOU CLEAN INDUCTORS?

8 78 83-4 DO YOU ADJUST INDUCTORS?

8 79 83-5 DO YOU MEASURE INDUCTORS?

8 80 83-6 DO YOU USE OR REFER TO INDUCTANCE?

8 81 83-7 DO YOU USE OR REFER TO HENRIES?

8 82 83-8 DO YOU USE OR REFER TO INDUCTIVE REACTANCE?

8 83 83-9 DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS?

8 84 83-10 DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS?

8 85 83-11 DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS?

8 86 83-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL?

22.1 57.1
16.1 52.0
37.0 45.2
66.8 84.7
7.3 18.1
22.6 64.4
3.1 9.5
.5 2.3
.0 1.1
.0 1.7
.5 2.3
2.1 3.4
1.6 2.3
1.6 3.4
.0 1.1
.0 1.1
.0 .6
1.6 2.3

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPT02 PAGE 8

205 307
50 50
(M) (P)

D TSK TITLES

- B 07 B3-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE? .5 1.1
- B 08 B3-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH? .5 2.3
- B 09 B3-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL? .5 1.7
- B 90 B3-16 DO YOU CALCULATE INDUCTANCE IN ELECTRICAL/ELECTRONIC CIRCUITS? 1.6 2.8
- B 91 B3-17 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS? 1.0 3.4
- B 92 B3-18 DO YOU CALCULATE INDUCTIVE REACTANCE? 2.1 2.3
- B 93 B3-19 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY? 1.0 3.4
- B 94 B3-20 DO YOU WORK WITH POWER INDUCTORS? 1.6 2.3
- B 95 B3-21 DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS? 2.1 4.0
- B 96 B3-22 DO YOU WORK WITH RADIO FREQUENCY INDUCTORS? 2.6 2.8

C CAPACITORS AND CAPACITIVE REACTANCE (C1), TRANSFORMERS (C2), MAGNETISM (C3)

- C 97 C1-1 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM C2-1; IF YES, CONTINUE. 3.6 11.9
- C 98 C1-2 DO YOU INSPECT CAPACITORS? .5 1.7
- C 99 C1-3 DO YOU CLEAN CAPACITORS? .5 .6

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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205 307
50 50
(M) (P)

D TSK TITLES

C 100	C1-4	DO YOU ADJUST CAPACITORS?	.5	2.3
C 101	C1-5	DO YOU TEST CAPACITORS?	.5	4.5
C 102	C1-6	DO YOU DISCHARGE CAPACITORS?	.5	2.8
C 103	C1-7	DO YOU MEASURE CAPACITORS?	1.0	2.8
C 104	C1-8	DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE?	.5	1.7
C 105	C1-9	DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTRONS IN A DIELECTRIC?	.5	1.1
C 106	C1-10	DO YOU USE OR REFER TO FARADS, MICROFARADS, OR PICOFARADS?	1.6	6.8
C 107	C1-11	DO YOU USE OR REFER TO CAPACITANCE?	2.6	9.6
C 108	C1-12	DO YOU USE OR REFER TO DIELECTRIC CONSTANT?	1.0	4.5
C 109	C1-13	DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF CAPACITORS?	.5	4.0
C 110	C1-14	DO YOU USE OR REFER TO CAPACITIVE REACTANCE?	1.0	4.5
C 111	C1-15	DO YOU USE OR REFER TO CAPACITOR COLOR CODES?	.5	3.4
C 112	C1-16	DO YOU WORK WITH CAPACITORS IN DC CIRCUITS?	2.6	11.3
C 113	C1-17	DO YOU WORK WITH CAPACITORS IN AC CIRCUITS?	2.6	8.5
C 114	C1-18	DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC AND AC?	3.1	8.5
C 115	C1-19	DO YOU CALCULATE CAPACITANCE IN ELECTRICAL/ELECTRONIC CIRCUITS?	1.6	4.0
C 116	C1-20	DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE DIELECTRIC CONSTANT?	1.0	4.5
C 117	C1-21	DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO THE DIELECTRIC THICKNESS?	1.6	2.3
C 118	C1-22	DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO	1.0	4.0

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KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSN	TITLES	205 50 (M)	307 50 (M)
C 119	C1-23 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LEADS VOLTAGE IN AC CAPACITOR CIRCUITS?	1.0	4.0
C 120	C1-24 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO FREQUENCY?	1.6	4.0
C 121	C1-25 DO YOU CALCULATE CAPACITIVE REACTANCE?	1.0	4.0
C 122	C1-26 DO YOU WORK WITH VARIABLE CAPACITORS?	.0	8.5
C 123	C1-27 DO YOU WORK WITH TRIMMER CAPACITORS?	.5	2.8
C 124	C1-28 DO YOU WORK WITH ELECTROLYTIC (FIXED) CAPACITORS?	.5	6.2
C 125	C1-29 DO YOU WORK WITH OTHER FIXED CAPACITORS?	1.0	5.1
C 126	C2-1 DO YOU WORK WITH TRANSFORMERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM C3-1; IF YES, CONTINUE.	1.0	14.1
C 127	C2-2 DO YOU INSPECT TRANSFORMERS?	.5	4.5
C 128	C2-3 DO YOU CLEAN TRANSFORMERS?	.5	.0
C 129	C2-4 DO YOU ADJUST TRANSFORMERS?	.5	2.3
C 130	C2-5 DO YOU TROUBLESHOOT TRANSFORMERS?	.5	4.5
C 131	C2-6 DO YOU MAKE A DISTINCTION BETWEEN MUTUAL INDUCTION AND MUTUAL INDUCTANCE (M)?	.5	1.1
C 132	C2-7 DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE, M?	.5	.6
C 133	C2-8 DO YOU REFER TO OR USE THE COEFFICIENT OF COUPLING WHEN WORKING WITH TRANSFORMERS?	.5	2.3
C 134	C2-9 DO YOU CALCULATE TURNS RATIOS FOR TRANSFORMERS USING CURRENT OR VOLTAGE RATIOS?	.5	.6
C 135	C2-10 DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH TRANSFORMERS?	.5	5.6
C 136	C2-11 DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR TRANSFORMERS?	.5	4.0
C 137	C2-12 DO YOU WORK WITH AUTOTRANSFORMERS?	.0	1.1
C 138	C2-13 DO YOU WORK WITH POWER TRANSFORMERS?	.0	5.6
C 139	C2-14 DO YOU WORK WITH AUDIO TRANSFORMERS?	.5	9.6
C 140	C2-15 DO YOU WORK WITH RADIO FREQUENCY TRANSFORMERS?	.5	4.0

D TSM	TITLES	205	307
		(M)	(M)
C 141 C2-16	DO YOU WORK WITH SATURABLE CORE TRANSFORMERS?	.0	.0
C 142 C2-17	DO YOU WORK WITH SENSING TRANSFORMERS?	.0	1.1
C 143 C2-18	DO YOU WORK WITH CONTROL TRANSFORMERS?	.0	2.8
C 144 C2-19	DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY MEASURING RESISTANCE?	.0	5.1
C 145 C2-20	DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING RESISTANCE?	.0	3.4
C 146 C2-21	DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING OUTPUT VOLTAGE?	.0	5.1
C 147 C2-22	DO YOU MEASURE RESISTANCE OF TRANSFORMER WINDINGS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO?	.0	1.1
C 148 C2-23	DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO?	.0	1.7
C 149 C2-24	DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS?	.0	6.2
C 150 C2-25	DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	4.5
C 151 C2-26	DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	4.5
C 152 C2-27	DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	5.1
C 153 C2-28	DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	2.3
C 154 C2-29	DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	2.3
C 155 C2-30	DO YOU REFER TO VARIABLE TRANSFORMER SCHEMATIC SYMBOLS?	.0	2.8
C 156 C2-31	DO YOU REFER TO COMBINATIONS OF SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	3.4

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O TSK	TITLES	205 50 (M)	307 50 (M)
C 157	C2-32 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS?	.0	1.1
C 158	C2-33 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH?	.5	1.7
C 159	C2-34 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO?	.5	1.7
C 160	C2-35 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS?	.5	3.4
C 161	C2-36 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS?	.5	.6
C 162	C2-37 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS?	.5	.6
C 163	C2-38 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS?	.5	.0
C 164	C2-39 DO YOU INSPECT THREE PHASE TRANSFORMERS?	.5	.0
C 165	C2-40 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS?	.5	.0
C 166	C2-41 DO YOU ADJUST THREE PHASE TRANSFORMERS?	.5	.0
C 167	C2-42 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS?	.5	.0
C 168	C3-1 DO YOU USE OR REFER TO PERMANENT MAGNETS?	4.7	2.3
C 169	C3-2 DO YOU USE OR REFER TO TEMPORARY MAGNETS?	3.6	2.8
C 170	C3-3 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS?	5.2	.6
C 171	C3-4 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS?	3.6	1.1
C 172	C3-5 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS?	5.2	1.1
C 173	C3-6 DO YOU USE OR REFER TO RESIDUAL MAGNETISM?	5.2	3.4
C 174	C3-7 DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX?	6.8	5.6

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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205 307
50 50
(M) (M)

D TSM TITLES

C 175 C3-8 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM?
C 176 C3-9 DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM?
C 177 C3-10 DO YOU USE OR REFER TO MAGNETIC INDUCTION?
C 178 C3-11 DO YOU USE OR REFER TO FLUX DENSITY?
C 179 C3-12 DO YOU USE OR REFER TO SATURABLE REACTANCE?

1.6 .6
2.1 1.1
3.6 3.4
4.7 1.1
3.6 .6

D RCL CIRCUITS (D1), TIME CONSTANTS (D2), FILTERS (D3)

D 180 D1-1 DO YOU WORK WITH RC, LR, OR RCL CIRCUITS IN YOUR PRESENT JOB? IF NO, GO TO ITEM D2-1; IF YES, CONTINUE.
D 181 D1-2 DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL CIRCUITS?

5.2 0.5
1.6 2.3

D 182 D1-3 DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN WORKING WITH RCL CIRCUITS?
D 183 D1-4 DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL CIRCUITS?

1.6 1.7
3.1 4.0

D 184 D1-5 DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL CIRCUITS?

3.1 3.9

D 185 D1-6 DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL CIRCUITS?

3.1 2.8

D 186 D1-7 DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL CIRCUITS?

3.1 7.9

D 187 D1-8 DO YOU USE OR REFER TO TRUE POWER (P SUB T) WHEN WORKING WITH RCL CIRCUITS?

3.1 4.0

D 188 D1-9 DO YOU USE OR REFER TO MAXIMUM POWER (P SUB M) WHEN WORKING WITH RCL CIRCUITS?

3.1 3.4

D 189 D1-10 DO YOU USE OR REFER TO AVERAGE POWER (P SUB AVE) WHEN WORKING WITH RCL CIRCUITS?

4.2 3.4

KESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 50 (M)	307 50 (M)
D 190	D1-11 DO YOU USE OR REFER TO APPARENT POWER (P SUB A) WHEN WORKING WITH RCL CIRCUITS?	2.1	2.3
D 191	D1-12 DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING WITH RCL CIRCUITS?	1.6	2.8
D 192	D1-13 DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN WORKING WITH RCL CIRCUITS?	1.6	6.2
D 193	D1-14 DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH RCL CIRCUITS?	5.7	10.7
D 194	D1-15 DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH RCL CIRCUITS?	4.7	7.9
D 195	D1-16 DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN WORKING WITH RCL CIRCUITS?	2.6	8.5
D 196	D1-17 DO YOU USE OR REFER TO HALF POWER POINTS WHEN WORKING WITH RCL CIRCUITS?	2.6	5.1
D 197	D1-18 DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING WITH RCL CIRCUITS?	3.6	7.3
D 198	D1-19 DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH RCL CIRCUITS?	.0	4.5
D 199	D1-20 DO YOU USE OR REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS?	1.0	4.0
D 200	D1-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS SUCH AS: SINE OF AND ANGLE = OPPOSITE SIDE/HYPOTENUSE?	2.1	1.1
D 201	D1-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS?	.5	2.8
D 202	D1-23 DO YOU USE OR REFER TO TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS?	2.1	5.6
D 203	D1-24 DO YOU USE OR REFER TO PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS?	1.0	2.3
D 204	D1-25 DO YOU USE OR REFER TO TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS?	2.1	4.5

Q TSM	TITLES	205 (H)	307 (H)
D 205	D1-26 DO YOU USE OR REFER TO IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS?	.5	3.9
D 206	D1-27 DO YOU USE OR REFER TO APPARENT POWER IP SUB A1 FOR SERIES RCL CIRCUITS?	.5	2.3
D 207	D1-28 DO YOU USE OR REFER TO TRUE POWER IP SUB T1 FOR SERIES RCL CIRCUITS?	1.6	3.9
D 208	D1-29 DO YOU USE OR REFER TO POWER FACTORS (PF) FOR SERIES RCL CIRCUITS?	.5	1.7
D 209	D1-30 DO YOU USE OR REFER TO TOTAL CURRENT FOR PARALLEL RCL CIRCUITS?	1.6	2.3
D 210	D1-31 DO YOU USE OR REFER TO IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS?	1.0	3.9
D 211	D1-32 DO YOU USE THE ASSUMED VOLTAGE METHOD FOR DETERMINING TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS?	1.0	2.3
D 212	D1-33 DO YOU USE OHM'S LAW FOR DETERMINING TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS?	2.1	5.6
D 213	D1-34 DO YOU CHECK CAPACITORS USING OHMMETERS?	.5	3.9
D 214	D1-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION?	.5	1.1
D 215	D1-36 DO YOU CHECK INDUCTORS USING OHMMETERS?	.5	4.0
D 216	D1-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION?	.5	.6
D 217	D1-38 DO YOU CHECK RESISTORS USING OHMMETERS?	.5	5.6
D 218	D1-39 DO YOU CHECK RESISTORS USING SUBSTITUTION?	.5	2.3
D 219	D1-40 DO YOU USE OR REFER TO THE RULE THAT PHASE ANGLE (THETA) = 0, POWER FACTOR (PF) = 1, AND APPARENT POWER IP SUB A1 = TRUE POWER IP SUB T1 FOR RESONANT CIRCUITS?	1.0	1.1
D 220	D1-41 DO YOU USE OR REFER TO RESONANT FREQUENCIES FOR RCL CIRCUITS?	2.6	9.5
D 221	D1-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS?	1.0	9.5

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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205 307
50 50
(M) (M)

D TSM TITLES

- D 222 D1-43 DO YOU USE OR REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS?
- D 223 D1-44 DO YOU USE OR REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 OF THE PEAK CURRENT VALUE?
- D 224 D1-45 DO YOU USE OR REFER TO THE GENERAL RULE THAT BANDWIDTH IS INVERSELY PROPORTIONAL TO THE QUALITY OF THE COIL (Q)?
- D 225 D1-46 DO YOU DETERMINE HOW CHANGES IN FREQUENCY, RESISTANCE, CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT OR PHASE ANGLES FOR RCL CIRCUITS?
- D 226 D2-1 IN YOUR PRESENT JOB, DO YOU WORK WITH, USE, OR REFER TO TIME CONSTANTS? IF NO, GO TO ITEM D3-1; IF YES, CONTINUE.
- D 227 D2-2 DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (TC)?
- D 228 D2-3 DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS?
- D 229 D2-4 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR RC OR LR CIRCUITS?
- D 230 D2-5 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS?
- D 231 D2-6 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES?
- D 232 D2-7 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OP ZERO) AFTER FIVE (5) TIME CONSTANTS?

1.0 2.8

4.2 4.5

1.0 1.7

1.0 3.4

2.6 2.3

.5 1.7

1.0 2.8

.5 .6

.5 .6

1.0 1.7

.5 1.1

205 307
50 50
(M) (M)

O TSK TITLES

O 233 D3-1 DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM E1-1; IF YES, CONTINUE.

26.6 20.3

O 234 D3-2 DO YOU INSPECT FILTER CIRCUITS?

1.0 2.8

O 235 D3-3 DO YOU CLEAN FILTER CIRCUITS?

1.6 .0

O 236 D3-4 DO YOU ALIGN OR ADJUST FILTER CIRCUITS?

2.6 4.5

O 237 D3-5 DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL?

.5 12.4

O 238 D3-6 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF FILTER CIRCUITS?

.5 4.0

O 239 D3-7 DO YOU WORK WITH LOW PASS FILTERS?

26.0 15.3

O 240 D3-8 DO YOU WORK WITH HIGH PASS FILTERS?

24.0 14.7

O 241 D3-9 DO YOU WORK WITH BANDPASS FILTERS?

22.4 19.8

O 242 D3-10 DO YOU WORK WITH BAND-REJECT FILTERS?

18.2 13.6

O 243 D3-11 DO YOU WORK WITH FILTERS BUT DON'T REMEMBER WHICH TYPE?

2.6 3.4

O 244 D3-12 DO YOU WORK WITH L-SECTION FILTER CONFIGURATIONS?

.5 2.8

O 245 D3-13 DO YOU WORK WITH T-SECTION FILTER CONFIGURATIONS?

1.0 2.3

O 246 D3-14 DO YOU WORK WITH PI-SECTION FILTER CONFIGURATIONS?

.5 1.7

O 247 D3-15 DO YOU WORK WITH YTTRIUM IRON GARNET (YIG) FILTERS?

.5 .0

O 248 D3-16 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC FILTERS?

1.0 3.4

E

COUPLING (E1), SOLDERING OR SOLDERLESS CONNECTIONS(E2),

RELAYS (E3)

E 249 E1-1 DO YOU WORK WITH COUPLING DEVICES OR CIRCUITRY IN YOUR PRESENT JOB? IF NO, GO TO ITEM E2-1; IF YES, CONTINUE.

2.1 10.7

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O YSK	TITLES	205	307
		SO	SO
		(M)	(M)
E 250 E1-2	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC COUPLING?	1.0	4.5
E 251 E1-3	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH IMPEDANCE COUPLING (MATCHING)?	.5	9.6
E 252 E1-4	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH OPTICAL COUPLING?	.5	2.8
E 253 E1-5	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH TRANSFORMER COUPLING?	.0	6.2
E 254 E1-6	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM RC COUPLING?	.0	3.4
E 255 E1-7	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM IMPEDANCE COUPLING?	.0	8.5
E 256 E1-8	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM TRANSFORMER COUPLING?	.0	4.5
E 257 E1-9	DO YOU WORK WITH DIRECT COUPLED CIRCUITS?	.5	5.1
E 258 E1-10	DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED CIRCUITS?	.0	4.5
E 259 E1-11	DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED CIRCUITS?	.0	4.0
E 260 E1-12	DO YOU WORK WITH OPTICAL COUPLING?	.5	2.3
E 261 E1-13	DO YOU WORK WITH OPTICAL COUPLING CIRCUITS?	.0	1.7
E 262 E1-14	DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS?	.0	4.5
E 263 E2-1	IN YOUR PRESENT JOB, DO YOU CONNECT ELECTRONIC CIRCUITS USING SOLDERLESS CONNECTIONS OR SOLDERING TECHNIQUES? IF NO, GO TO ITEM E3-1; IF YES, CONTINUE.	1.6	19.8
E 264 E2-2	DO YOU SOLDER CONNECTIONS?	.0	16.4
E 265 E2-3	DO YOU DESOLDER CONNECTIONS?	.0	16.9

D TSM	TITLES	205 (M)	307 50 (M)
E 266 E2-4	DO YOU PERFORM HIGH RELIABILITY SOLDERING?	.0	7.3
E 267 E2-5	DO YOU INSPECT SOLDERED CONNECTIONS?	.0	15.3
E 268 E2-6	DO YOU CLEAN OR TIN CONNECTIONS?	.5	12.4
E 269 E2-7	DO YOU MAKE HARDWIRE CONNECTIONS?	.0	16.4
E 270 E2-8	DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS?	.5	4.0
E 271 E2-9	DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS?	.0	5.1
E 272 E2-10	DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS?	.0	3.4
E 273 E2-11	DO YOU SOLDER ACTIVE COMPONENTS, SUCH AS INTEGRATED CIRCUITS?	.0	1.7
E 274 E2-12	DO YOU PERFORM WIRE WRAPPING IN LIEU OF SOLDERING?	.0	14.1
E 275 E2-13	DO YOU PERFORM CRIMPING IN LIEU OF SOLDERING?	.0	6.2
E 276 E2-14	DO YOU PERFORM WIRE CONNECTIONS USING A 714 PUNCH-ON TOOL IN LIEU OF SOLDERING?	.0	7.9
E 277 E3-1	DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB? IF NO, GO TO ITEM F1-1; IF YES, CONTINUE.	.5	28.2
E 278 E3-2	DO YOU ADJUST RELAYS?	.0	6.8
E 279 E3-3	DO YOU CLEAN RELAYS?	.0	2.3
E 280 E3-4	DO YOU INSPECT RELAYS?	.0	5.6
E 281 E3-5	DO YOU TROUBLESHOOT RELAYS?	.0	17.5
E 282 E3-6	DO YOU MONITOR BIAS OUTPUT ON RELAYS?	.0	16.4
E 283 E3-7	DO YOU REMOVE OR REPLACE RELAYS?	.0	10.2
E 284 E3-8	DO YOU PERFORM TASKS ON CONTACTS OF RELAYS?	.0	3.4
E 285 E3-9	DO YOU PERFORM TASKS ON COILS OF RELAYS?	.0	.0
E 286 E3-10	DO YOU PERFORM TASKS ON ARMATURES OF RELAYS?	.0	.0
E 287 E3-11	DO YOU PERFORM TASKS ON SPRINGS OF RELAYS?	.0	1.1
E 288 E3-12	DO YOU PERFORM TASKS ON SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAYS?	.0	.6
E 289 E3-13	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAYS?	.0	4.0

D YSK	TITLES	205 (M)	307 (M)
E 290 E3-14 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS?		.0	4.0
E 291 E3-15 DO YOU REFER TO SINGLE POLE, DOUBLE THROW (SPDT) BOLS FOR RELAYS?		.0	4.5
E 292 E3-16 DO YOU REFER TO DOUBLE POLE, DOUBLE THROW (DPDT) SYMBOLS FOR RELAYS?		.0	4.0
E 293 E3-17 DO YOU OR REFER TO OTHER RELAY SYMBOLS?		.0	3.4
E 294 E3-18 DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE?		.0	5.6

F MICROPHONES AND SENSING DEVICES (F1), SPEAKERS (F2), OSCILLOSCOPES (F3)

F 295 F1-1 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH MICROPHONES OR OTHER SENSING DEVICES SUCH AS TRANSDUCERS? IF NO, GO TO ITEM F2-1; IF YES, CONTINUE.	15.1	15.8
F 296 F1-2 DO YOU INSPECT MICROPHONES?	.5	5.1
F 297 F1-3 DO YOU CLEAN MICROPHONES?	.5	2.3
F 298 F1-4 DO YOU OPERATE MICROPHONES?	14.1	16.9
F 299 F1-5 DO YOU TROUBLESHOOT MICROPHONES WIRE CONNECTIONS?	.5	5.1
F 300 F1-6 DO YOU TROUBLESHOOT MICROPHONE COMPONENT PARTS OTHER THAN WIRE CONNECTIONS?	.5	2.3
F 301 F1-7 DO YOU REMOVE AND REPLACE COMPLETE MICROPHONES?	1.6	5.6
F 302 F1-8 DO YOU REMOVE OR REPLACE MICROPHONE COMPONENT PARTS?	.0	2.3
F 303 F1-9 DO YOU PERFORM TASKS ON CARBON MICROPHONES?	2.1	2.3
F 304 F1-10 DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES?	.5	.0
F 305 F1-11 DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES?	1.0	.6
F 306 F1-12 DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES?	4.7	3.4
F 307 F1-13 DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES?	.0	.0

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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Q TSM	TITLES	205 (M)	307 50 (M)
F 308 F1-14	DO YOU PERFORM TASKS ON TRANSDUCERS?		
F 309 F2-1	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH SPEAKERS? IF NO, GO TO ITEM F3-1; IF YES, CONTINUE.	1.0	.6
F 310 F2-2	DO YOU INSPECT SPEAKERS?	15.6	45.2
F 311 F2-3	DO YOU CLEAN SPEAKERS?	1.0	5.6
F 312 F2-4	DO YOU OPERATE SPEAKERS?	1.0	2.8
F 313 F2-5	DO YOU TROUBLESHOOT SPEAKER WIRE CONNECTIONS?	14.1	43.5
F 314 F2-6	DO YOU TROUBLESHOOT SPEAKER COMPONENT PARTS OTHER THAN WIRE CONNECTIONS?	2.1	14.1
F 315 F2-7	DO YOU REMOVE OR REPLACE COMPLETE SPEAKERS?	.5	3.4
F 316 F2-8	DO YOU REMOVE OR REPLACE SPEAKER PARTS?	1.6	7.9
F 317 F2-9	DO YOU PERFORM ANY TASKS ON CONE SPEAKER PARTS?	.0	1.1
F 318 F2-10	DO YOU PERFORM ANY TASKS ON SPIDER SPEAKER PARTS?	.0	.0
F 319 F2-11	DO YOU PERFORM ANY TASKS ON FIELD COIL SPEAKER PARTS?	.0	.0
F 320 F2-12	DO YOU PERFORM ANY TASKS ON VOICE COIL SPEAKER PARTS?	.5	.0
F 321 F2-13	DO YOU PERFORM ANY TASKS ON PERMANENT MAGNET SPEAKER PARTS?	.0	.0
F 322 F2-14	DO YOU PERFORM ANY TASKS ON ELECTROMAGNET SPEAKER PARTS?	.0	.0
F 323 F2-15	DO YOU PERFORM ANY TASKS ON SOFT IRON CORE SPEAKER PARTS?	.0	.0
F 324 F3-1	DO YOU USE OSCILLOSCOPES IN YOUR PRESENT JOB? IF NO, GO TO ITEM 61-1; IF YES, CONTINUE.	46.4	78.0
F 325 F3-2	DO YOU PERFORM OPERATIONAL CHECKS USING OSCILLOSCOPES?	29.7	67.2
F 326 F3-3	DO YOU PERFORM ALIGNMENTS OR ADJUSTMENTS USING OSCILLOSCOPES?	13.5	30.5
F 327 F3-4	DO YOU TROUBLESHOOT ELECTRONIC CIRCUITS USING OSCILLOSCOPES?	.5	58.2
F 328 F3-5	DO YOU USE OSCILLOSCOPES TO MEASURE FREQUENCIES?	46.9	53.1
F 329 F3-6	DO YOU USE OSCILLOSCOPES TO MEASURE TIME?	45.8	45.8

NEESLER ELECTRONIC PPINCIPLES INVENTORY DATA

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D TSM	TITLES	205	307
		50	50
		(M)	(M)
F 330	F3-7 DO YOU USE OSCILLOSCOPES TO OBSERVE LISSAJOUS PATTERNS?	26.6	11.9
F 331	F3-8 DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE JUTILIZING ATTENUATOR PROBES.	19.8	23.2
F 332	F3-9 DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME MEASUREMENTS USING DELAY TIME MULTIPLIER?	39.6	23.2
F 333	F3-10 DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGES?	22.9	44.1
F 334	F3-11 DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGES?	22.9	57.1
F 335	F3-12 DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROLS?	31.8	31.6
F 336	F3-13 DO YOU USE OSCILLOSCOPES TO OBSERVE DATA PATTERNS?	34.9	68.4
F 337	F3-14 DO YOU USE OSCILLOSCOPES TO MEASURE RIPPLE VOLTAGES?	5.7	26.0
F 338	F3-15 DO YOU USE OSCILLOSCOPES TO MEASURE PHASE JITTERS?	22.4	49.2
F 339	F3-16 DO YOU USE OSCILLOSCOPES TO DISPLAY SWEEP GENERATOR PATTERNS?	16.1	35.0
F 340	F3-17 DO YOU USE OSCILLOSCOPES TO OBSERVE PHASE RELATIONSHIPS?	27.6	52.5
F 341	F3-18 DO YOU USE OSCILLOSCOPES TO OBSERVE SAMPLING DISPLAYS?	21.4	32.2

6 SEMICONDUCTOR DIODES (G1), TRANSISTORS (G2), TRANSISTOR AMPLIFIERS (G3)

6 342 61-1 DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT JOB? IF NO, GO TO ITEM G2-1; IF YES, CONTINUE.

6 343 61-2 DO YOU INSPECT DIODES?

6 344 61-3 DO YOU CHECK DIODES?

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NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPT02 PAGE 23

205 307
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(M) (M)

0 TSM TITLES

6 345 61-4 DO YOU USE ENERGY LEVEL DIAGRAMS IN YOUR WORK WITH DIODES?
6 346 61-5 DO YOU USE PN JUNCTION DIODE CHARACTERISTIC CURVES, TOGETHER WITH VALUES OF FORWARD AND REVERSE BIAS VOLTAGE, TO COMPUTE FORWARD OR REVERSE BIAS RESISTANCE?
6 347 61-6 DO YOU COMPUTE FORWARD OR REVERSE BIAS RESISTANCE FOR DIODES?
6 348 61-7 DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES?
6 349 61-8 DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONIC COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE?
6 350 61-9 DO YOU REFER TO OR DO YOU DETERMINE THE GENERAL EFFECTS OF DOPING ON CURRENT FLOW?
6 351 61-10 DO YOU MEASURE FORWARD BIAS RESISTANCE?
6 352 61-11 DO YOU MEASURE REVERSE BIAS RESISTANCE?
6 353 61-12 DO YOU READ DIODE COLOR CODING?
6 354 61-13 DO YOU READ DIODE NUMBERING SYSTEM, SUCH AS IN 538?
6 355 61-14 DO YOU USE THE SYMBOL DN DIODE WHICH INDICATES THE CATHODE END?
6 356 61-15 DO YOU DETERMINE DIRECTION OF CURRENT THROUGH A DIODE?
6 357 61-16 DO YOU NEED TO KNOW WHICH MATERIALS ARE USED IN THE CONSTRUCTION OF DIODES SUCH AS GERMANIUM OR SILICON?
6 358 61-17 DO YOU NEED TO KNOW THAT SEMICONDUCTORS HAVE NEGATIVE TEMPERATURE COEFFICIENTS OR RESISTANCE (AS TEMPERATURE INCREASES RESISTANCE DECREASES)?
6 359 61-18 DO YOU USE OR REFER TO PN JUNCTION DIODE CHARACTERISTIC CURVES (PERHAPS YOU DO THIS TO IDENTIFY POINTS OF STRUCTURAL BREAKDOWN OR OPERATING REGIONS)?

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KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLS	205 50 (M)	307 50 (M)
6 360 61-19	DO YOU DETERMINE WHETHER PN JUNCTION DIODES ARE FORWARD BIASED OR REVERSE BIASED WHEN YOU READ OR INTERPRET CIRCUIT DIAGRAMS?	.0	1.7
6 361 61-20	DO YOU NEED AN UNDERSTANDING OF VALENCE BAND IN SEMICONDUCTOR MATERIALS?	.0	1.1
6 362 61-21	DO YOU NEED AN UNDERSTANDING OF FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS?	.0	1.1
6 363 61-22	DO YOU NEED AN UNDERSTANDING OF CONDUCTION BAND IN SEMICONDUCTOR MATERIALS?	.0	.6
6 364 61-23	DO YOU NEED AN UNDERSTANDING OF CONVALENT BONDING IN SEMICONDUCTOR MATERIALS?	.0	1.1
6 365 61-24	DO YOU NEED AN UNDERSTANDING OF ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS?	.0	.6
6 366 61-25	DO YOU NEED AN UNDERSTANDING OF ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS?	.0	.6
6 367 61-26	DO YOU NEED AN UNDERSTANDING OF DONOR IMPURITY IN SEMICONDUCTORS?	.0	.6
6 368 61-27	DO YOU NEED AN UNDERSTANDING OF ACCEPTOR IMPURITY IN SEMICONDUCTORS?	.0	.6
6 369 61-28	DO YOU NEED AN UNDERSTANDING OF P-TYPE SEMICONDUCTOR MATERIAL?	.0	.6
6 370 61-29	DO YOU NEED AN UNDERSTANDING OF N-TYPE SEMICONDUCTOR MATERIAL?	.0	.6
6 371 61-30	DO YOU NEED AN UNDERSTANDING OF MAJORITY CARRIERS IN SEMICONDUCTORS?	.0	.6
6 372 61-31	DO YOU NEED AN UNDERSTANDING OF MINORITY CARRIERS IN SEMICONDUCTORS?	.0	.6
6 373 61-32	DO YOU NEED AN UNDERSTANDING OF JUNCTION RECOMBINATION IN SEMICONDUCTORS?	.0	1.1
6 374 61-33	DO YOU NEED AN UNDERSTANDING OF DEPLETION REGION IN SEMICONDUCTORS?	.0	1.1

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 50 (M)	307 50 (M)
6 375	61-34 DO YOU NEED AN UNDERSTANDING OF RELATIONSHIP BETWEEN BARRIER WIDTH AND DIFFERENCE OF POTENTIAL?	.0	1.1
6 376	61-35 DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES?	.0	.6
6 377	61-36 DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS?	.0	.6
6 378	61-37 DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION?	.0	.6
6 379	61-38 DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS?	.0	.6
6 380	61-39 DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT DIODE RATINGS?	.0	1.1
6 381	61-40 DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE RATINGS?	.0	.6
6 382	61-41 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS?	.0	1.1
6 383	62-1 DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM G3-1; IF YES, CONTINUE.	1.0	1.7
6 384	62-2 DO YOU INSPECT TRANSISTORS?	.0	.0
6 385	62-3 DO YOU CHECK TRANSISTORS?	.0	.6
6 386	62-4 DO YOU NEED AN UNDERSTANDING OF EMITTER - BASE (EB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS?	.0	.6
6 387	62-5 DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS?	.0	.6
6 388	62-6 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC) RESISTANCE MEASUREMENTS?	.0	.6
6 389	62-7 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION?	.0	.6
6 390	62-8 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION?	.0	.6

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 (M)	307 (M)
6 391	62-9 DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE TRANSISTOR STRUCTURE (COLLECTOR, BASE, AND EMITTER)?	.0	.6
6 392	62-10 DO YOU USE OR REFER TO LEAKAGE CURRENT (I SUB C80) IN A TRANSISTOR?	.0	.0
6 393	62-11 DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS?	.0	1.1
6 394	62-12 DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS Q1, A2, A3, ETC.?	.0	1.1
6 395	62-13 DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION INFORMATION?	.0	.6
6 396	62-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE TRANSISTOR BASE CURRENT (I SUB B) IS NORMALLY SIGNIFICANTLY SMALLER THAN THE EMITTER CURRENT (I SUB E) USUALLY (I SUB B) BEING 2 TO 8 PERCENT OF (I SUB E)?	.0	.6
6 397	62-15 DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR TRANSISTORS?	.0	1.1
6 398	62-16 DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT (I SUB C80) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES?	.0	.0
6 399	62-17 DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC CURVES?	.0	.6
6 400	62-18 DO YOU USE OR REFER TO BETA TRANSISTOR GAINS?	.0	.0
6 401	62-19 DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS?	.0	.0
6 402	62-20 DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS?	.0	.0
6 403	62-21 DO YOU USE OR REFER TO THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS BY DIVIDING THE BASE - EMITTER VOLTAGE INTO THE BASE COLLECTOR VOLTAGE (AV = VCB/VBE)?	.0	.6
6 404	62-22 DO YOU USE OR REFER TO THE CURRENT GAIN FOR SPECIFIC TRANSISTORS BY DIVIDING THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT (AI = IC/IB)?	.0	.0

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPTD2 PAGE 27

205 307
50 50
(M) (M)

D TSM TITLES

- 6 405 G2-23 DO YOU USE OR REFER TO THE POWER GAIN FOR SPECIFIC TRANSISTORS BY MULTIPLYING THE CURRENT GAIN TIMES THE VOLTAGE GAIN ($AP = AI \times AV$)?
- 6 406 G2-24 DO YOU PERFORM TRANSISTOR MATCHING THROUGH THE USE OF CURVE TRACING?
- 6 407 G3-1 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 41-1; IF YES, CONTINUE.
- 6 408 G3-2 DO YOU INSPECT TRANSISTOR AMPLIFIERS?
- 6 409 G3-3 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS?
- 6 410 G3-4 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL?
- 6 411 G3-5 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS?
- 6 412 G3-6 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER?
- 6 413 G3-7 DO YOU REMOVE OR REPLACE AMPLIFIER CIRCUIT COMPONENTS?
- 6 414 G3-8 DO YOU USE OR REFER TO THE CHANGE IN COLLECTOR CURRENT RESULTS FROM A CHANGE IN BASE CURRENT CONCERNING TRANSISTOR AMPLIFIERS?
- 6 415 G3-9 DO YOU USE OR REFER TO THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT CONCERNING TRANSISTOR AMPLIFIERS?
- 6 416 G3-10 DO YOU USE OR REFER TO THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT?
- 6 417 G3-11 DO YOU USE OR REFER TO THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL CONCERNING TRANSISTOR AMPLIFIERS?
- 6 418 G3-12 DO YOU USE OR REFER TO THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL CONCERNING TRANSISTOR AMPLIFIERS?

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1.6 22.0

.0 6.2

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.0 18.1

.0 5.6

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.5 1.1

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.0 1.1

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSK	TITLES	205 50 (M)	307 50 (P)
6 419	63-13 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)?	.0	.0
6 420	63-14 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR?	.0	.6
6 421	63-15 DO YOU MEASURE VOLTAGE GAIN CONCERNING TRANSISTOR AMPLIFIERS?	1.0	7.9
6 422	63-16 DO YOU MEASURE CURRENT GAIN CONCERNING TRANSISTOR AMPLIFIERS?	.5	5.1
6 423	63-17 DO YOU MEASURE POWER GAIN CONCERNING TRANSISTOR AMPLIFIERS?	.5	13.0
6 424	63-18 DO YOU USE OR REFER TO THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS BY DIVIDING THE CHANGE IN BASE-EMITTER VOLTAGE INTO THE CHANGE OF THE BASE COLLECTOR VOLTAGE?	.0	.6
6 425	63-19 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION?	.0	1.1
6 426	63-20 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION?	.0	1.7
6 427	63-21 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION?	.0	.6
6 428	63-22 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION?	.0	1.1
6 429	63-23 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION?	.0	.6

D TSK	TITLES	205 (M)	307 (M)
6 430	63-24 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION?	.0	.6
6 431	63-25 DO YOU IDENTIFY OR TROUBLESHOOT AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS?	1.0	12.4
6 432	63-26 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS?	1.6	11.9
6 433	63-27 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS?	1.0	11.9
6 434	63-28 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING EMITTER RESISTANCE FOR TRANSISTOR AMPLIFIERS?	1.0	4.5
6 435	63-29 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS?	.5	2.0
6 436	63-30 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS?	.5	.0
6 437	63-31 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS?	.5	2.8
6 438	63-32 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS?	.5	.6
6 439	63-33 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS?	.5	.6
6 440	63-34 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS?	.5	.6
6 441	63-35 DO YOU TROUBLESHOOT OR REPAIR VOLTAGE MULTIPLIERS (DOUBLERS/TRIPLERS)?	.5	1.7
6 442	63-36 DO YOU TROUBLESHOOT OR REPAIR RF AMPLIFIERS?	.5	4.5
6 443	63-37 DO YOU TROUBLESHOOT OR REPAIR WIDEBAND AMPLIFIERS (VIDEO AMPS)?	.5	4.0
6 444	63-38 DO YOU TROUBLESHOOT OR REPAIR AUDIO AMPLIFIERS?	.5	13.0
6 445	63-39 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL OR POWER AMPLIFIERS?	.5	3.4
6 446	63-40 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS?	.5	.0

D TSM	TITLES	205 50 (M)	307 50 (M)
G 007 G3-01	DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY AMPLIFIERS?	.5	.6
G 008 G3-02	DO YOU TROUBLESHOOT OR REPAIR IF AMPLIFIERS?	.5	3.4
G 009 G3-03	DO YOU TROUBLESHOOT OR REPAIR DIFFERENTIATING AMPLIFIERS (DIFF AMPS)?	.5	.6
G 050 G3-04	DO YOU TROUBLESHOOT OR REPAIR OPERATIONAL AMPLIFIERS (OP AMPS)?	.5	1.7
G 051 G3-05	DO YOU TROUBLESHOOT OR REPAIR INTEGRATING AMPLIFIERS?	.5	1.7
G 052 G3-06	DO YOU TROUBLESHOOT OR REPAIR SUMMING AMPLIFIERS?	.5	.6

H	SOLID-STATE SPECIAL PURPOSE DEVICES (H1), POWER SUPPLIES (H2), OSCILLATORS (H3)	-----	
H 053 H1-1	DO YOU USE OR REFER TO VARACTORS/VARICAP COMPONENTS?	.5	3.4
H 054 H1-2	DO YOU USE OR REFER TO TUNNEL DIODE COMPONENTS?	1.0	2.8
H 055 H1-3	DO YOU USE OR REFER TO FIELD EFFECT TRANSISTOR (FET) COMPONENTS?	1.0	3.4
H 056 H1-4	DO YOU USE OR REFER TO UNIJUNCTION TRANSISTOR COMPONENTS?	.5	1.1
H 057 H1-5	DO YOU USE OR REFER TO ZENER DIODE COMPONENTS?	.5	6.8
H 058 H1-6	DO YOU USE OR REFER TO INTEGRATED CIRCUIT COMPONENTS?	6.3	14.7
H 059 H1-7	DO YOU USE OR REFER TO PIN DIODE COMPONENTS?	.5	2.3
H 060 H1-8	DO YOU USE OR REFER TO LED'S/VLCD'S COMPONENTS?	17.7	31.6
H 061 H1-9	DO YOU USE OR REFER TO FANTAIL TRANSISTOR COMPONENTS?	.5	.6
H 062 H1-10	DO YOU USE OR REFER TO SILICON CONTROL RECTIFIER (SCR) COMPONENTS?	.5	2.3
H 063 H1-11	DO YOU USE OR REFER TO TRIAC COMPONENTS?	.5	1.1
H 064 H1-12	DO YOU USE OR REFER TO PROGRAMMABLE UNIJUNCTION TRANSISTOR (PUT) COMPONENTS?	.5	.6

205 307
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(H) (M)

TITLES

H 465 H1-13 DO YOU USE OR REFER TO SILICON CONTROLLED SWITCH (SCS) COMPONENTS?	1.0	.0
H 466 H1-14 DO YOU USE OR REFER TO SILICON UNILATERAL SWITCH (SUS) COMPONENTS?	.5	.6
H 467 H2-1 IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES? IF NO, GO TO ITEM H3-1; IF YES, CONTINUE.	4.7	26.6
H 468 H2-2 DO YOU INSPECT POWER SUPPLIES?	1.0	10.7
H 469 H2-3 DO YOU CLEAN POWER SUPPLIES?	.5	2.8
H 470 H2-4 DO YOU ALIGN OR ADJUST POWER SUPPLIES?	1.0	6.2
H 471 H2-5 DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL?	.5	15.8
H 472 H2-6 DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS?	.5	2.3
H 473 H2-7 DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES?	.5	9.0
H 474 H2-8 DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS?	.5	.6
H 475 H2-9 DO YOU INSPECT OR SERVICE COOLANT LEVELS?	.5	.0
H 476 H2-10 DO YOU WORK WITH HALF-WAVE RECTIFIERS?	.5	2.8
H 477 H2-11 DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN BRIDGE RECTIFIERS?	.5	3.4
H 478 H2-12 DO YOU WORK WITH BRIDGE RECTIFIERS?	.5	5.1
H 479 H2-13 DO YOU WORK WITH THREE-PHASE RECTIFIERS?	.5	.6
H 480 H2-14 DO YOU USE OR REFER TO INPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	2.6	14.1
H 481 H2-15 DO YOU USE OR REFER TO INPUT FREQUENCIES IN YOUR WORK WITH RECTIFIERS?	3.6	11.3
H 482 H2-16 DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	3.1	12.4
H 483 H2-17 DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	2.6	7.9
H 484 H2-18 DO YOU USE OR REFER TO RIPPLE AMPLITUDE IN YOUR WORK WITH RECTIFIERS?	.5	4.5
H 485 H2-19 DO YOU USE OR REFER TO RIPPLE FREQUENCIES IN YOUR WORK WITH RECTIFIERS?	.0	4.5

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D TSK	TITLES	205 50 (H)	307 50 (H)
M 486	H2-20 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGES IN YOUR WORK WITH RECTIFIERS?	.5	4.0
M 487	H2-21 DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS IN YOUR WORK WITH RECTIFIERS?	2.1	9.6
M 488	H2-22 DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	2.6	9.0
M 489	H2-23 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE FILTERS?	1.0	4.0
M 490	H2-24 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE FILTERS?	1.6	2.8
M 491	H2-25 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE INPUT L-TYPE FILTERS?	1.0	1.7
M 492	H2-26 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE INPUT L-TYPE FILTERS?	.5	2.3
M 493	H2-27 DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE FILTERS?	.5	2.3
M 494	H2-28 DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE FILTERS?	.5	1.7
M 495	H2-29 DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF FILTER WITH A DIFFERENT TYPE FILTER?	1.0	.0
M 496	H2-30 DO YOU WORK WITH POWER SUPPLY REGULATOR CIRCUITS OTHER THAN SOLID-STATE?	.5	4.0
M 497	H2-31 DO YOU WORK WITH SOLID-STATE POWER SUPPLY REGULATOR CIRCUITS?	2.1	6.2
M 498	H3-1 DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 11-1; IF YES, CONTINUE.	15.6	58.8
M 499	H3-2 DO YOU INSPECT OSCILLATORS?	.5	13.6
M 500	H3-3 DO YOU ALIGN OR ADJUST OSCILLATORS?	2.6	27.7
M 501	H3-4 DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS?	1.6	12.4
M 502	H3-5 DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS?	.0	.6
M 503	H3-6 DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL?	.5	15.8

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O TSM	TITLES	205 (M)	307 50 (M)
M 504 H3-7	DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS?		
M 505 H3-8	DO YOU USE OR REFER TO FEEDBACK (DEGENERATIVE OR REGENERATIVE)?	.0 4.2	2.3 22.6
M 506 H3-9	DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FDD)?	7.3	23.7
M 507 H3-10	DO YOU USE OR REFER TO AMPLITUDE STABILITY?	9.4	35.0
M 508 H3-11	DO YOU USE OR REFER TO FREQUENCY STABILITY?	12.0	40.7
M 509 H3-12	DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT (CRYSTAL OSCILLATIONS)?	3.1	2.8
M 510 H3-13	DO YOU USE OR REFER TO HARMONIC DISTORTION?	6.3	52.5
M 511 H3-14	DO YOU WORK WITH OSCILLATORS WHICH CONTAIN DC TANK CIRCUITS?	.5	2.8
M 512 H3-15	DO YOU WORK WITH OSCILLATORS WHICH CONTAIN RC NETWORKS?	1.0	4.0
M 513 H3-16	DO YOU WORK WITH OSCILLATORS WHICH CONTAIN CRYSTALS?	4.2	6.8
M 514 H3-17	DO YOU WORK WITH OSCILLATORS WHICH CONTAIN PHASE LOCK LOOPS (PLL)?	5.2	4.0
M 515 H3-18	DO YOU WORK WITH OSCILLATORS WHICH CONTAIN - DON'T KNOW WHICH TYPE OF FDD?	7.3	31.6
M 516 H3-19	DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS?	.5	2.3
M 517 H3-20	DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS?	.5	2.3
M 518 H3-21	DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS?	.5	.6
M 519 H3-22	DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS?	.0	.0
M 520 H3-23	DO YOU WORK WITH VOLTAGE CONTROL SINUSOIDAL OSCILLATORS?	3.1	1.7
M 521 H3-24	DO YOU WORK WITH CRYSTAL SINUSOIDAL OSCILLATORS?	3.6	4.5
M 522 H3-25	DO YOU WORK WITH VOLTAGE CONTROL OSCILLATORS (VCO) SINUSOIDAL OSCILLATORS?	5.7	2.3

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D YSK TITLES

M 523 H3-26 DO YOU WORK WITH WIEN BRIDGE OSCILLATORS SINUSOIDAL
OSCILLATORS? 205 307
50
(M) (M)

M 524 H3-27 DO YOU WORK WITH - DON'T KNOW WHICH TYPE OF
SINUSOIDAL OSCILLATOR? 7.0 33.3

M 525 H3-28 DO YOU WORK WITH PULSE GENERATING CIRCUITS? 7.0 14.1

M 526 H3-29 DO YOU WORK WITH BLOCKING OSCILLATORS? .5 .6

M 527 H3-30 DO YOU WORK WITH BURST GENERATORS? 1.6 1.1

M 528 H3-31 DO YOU WORK WITH BLOCKED OSCILLATORS? .5 .6

I MULTIVIBRATORS (11), LIMITERS AND CLAMPERS (12), ELECTRON
TUBES (13)

I 529 I1-1 DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB?
IF NO, GO TO ITEM I2-1; IF YES, CONTINUE. 1.6 2.8

I 530 I1-2 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK
CIRCUIT FREQUENCY DETERMINING DEVICES (FDD)? .0 .6

I 531 I1-3 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC
NETWORK FREQUENCY DETERMINING DEVICES (FDD)? .5 1.1

I 532 I1-4 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTAL
FREQUENCY DETERMINING DEVICES (FDD)? 1.0 1.1

I 533 I1-5 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN - DON'T
KNOW WHICH TYPE OF FDD? .5 1.1

I 534 I1-6 DO YOU WORK WITH ASTABLE (FREE RUNNING)
MULTIVIBRATORS? .5 2.3

I 535 I1-7 DO YOU WORK WITH MONOSTABLE (ONE SHOT) MULTIVIBRATORS? .5 2.3

I 536 I1-8 DO YOU WORK WITH BISTABLE (FLIP FLOP) MULTIVIBRATORS? .5 2.3

I 537 I1-9 DO YOU WORK WITH R-S FLIP-FLOP INTEGRATED CIRCUIT
REGULATORS? .0 .0

D	Y5M	TITLES	205 50 (M)	307 50 (M)
I	538	11-10 DO YOU WORK WITH J-K FLIP-FLOP INTEGRATED CIRCUIT REGULATORS?	.5	.0
I	539	11-11 DO YOU WORK WITH "D" FLIP-FLOP INTEGRATED CIRCUIT REGULATORS?	.5	.0
I	540	12-1 DO YOU WORK WITH LIMITERS OR CLAMPERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 13-1; IF YES, CONTINUE.	2.1	2.3
I	541	12-2 DO YOU WORK WITH SERIES DIODE LIMITERS?	.5	1.7
I	542	12-3 DO YOU WORK WITH SHUNT DIODE LIMITERS?	.5	1.7
I	543	12-4 DO YOU WORK WITH LIMITERS WITH BIAS?	1.0	1.1
I	544	12-5 DO YOU WORK WITH ZENER DIODE LIMITERS?	.5	1.7
I	545	12-6 DO YOU WORK WITH TRANSISTOR LIMITERS?	1.0	1.7
I	546	12-7 DO YOU WORK WITH TRIODE LIMITERS?	.5	.6
I	547	12-8 DO YOU WORK WITH BASIC DIODE CLAMPING CIRCUITS?	.0	1.1
I	548	12-9 DO YOU WORK WITH BIAS DIODE CLAMPING CIRCUITS?	.5	1.1
I	549	12-10 DO YOU WORK WITH DC RESTORERS (DCR)?	.5	.6
I	550	13-1 IN YOUR PRESENT JOB, DO YOU WORK ON EQUIPMENT WHICH CONTAINS BASIC ELECTRON TUBES (FOR PURPOSES OF THIS QUESTION DO NOT CONSIDER HIGH-FREQUENCY DEVICES SUCH AS KLYSTRONS, TRAVELING WAVE TUBES, BACKWARD WAVE OSCILLATORS, OR MAGNETRONS AS ELECTRON TUBES)? IF NO, GO TO ITEM 11-1; IF YES, CONTINUE.	4.7	1.7
I	551	13-2 DO YOU CHECK THE CONDITION OF ELECTRON TUBES?	.5	.6
I	552	13-3 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES?	.5	.0
I	553	13-4 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES?	.5	1.7
I	554	13-5 DO YOU USE SCOPES TO CHECK ELECTRON TUBES?	1.0	1.7
I	555	13-6 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES?	.5	1.1
I	556	13-7 DO YOU USE OR REFER TO CUTOFF?	1.6	1.1
I	557	13-8 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING?	1.0	1.7
I	558	13-9 DO YOU USE OR REFER TO PEAK CURRENT RATING?	1.0	2.3
I	559	13-10 DO YOU USE OR REFER TO TRANSIT TIME?	.5	1.7
I	560	13-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING?	.5	1.1

D TSM	TITLES	205 (M)	307 50 (M)
I 561 13-12	DO YOU USE OR REFER TO SATURATION?	1.6	2.3
I 562 13-13	DO YOU USE OR REFER TO DC PLATE RESISTANCE?	.5	1.1
I 563 13-14	DO YOU USE OR REFER TO PLATE VOLTAGE?	.5	1.7
I 564 13-15	DO YOU USE OR REFER TO PLATE CURRENT?	.5	1.7
I 565 13-16	DO YOU USE OR REFER TO GRID VOLTAGE?	1.6	2.3
I 566 13-17	DO YOU USE OR REFER TO GRID CURRENT?	.5	1.7
I 567 13-18	DO YOU USE OR REFER TO CATHODE VOLTAGE?	1.0	1.7
I 568 13-19	DO YOU USE OR REFER TO CATHODE CURRENT?	1.0	1.7
I 569 13-20	DO YOU USE OR REFER TO FILAMENT VOLTAGE?	.5	1.7
I 570 13-21	DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)?	.5	1.1
I 571 13-22	DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE, ETC.) AMPLIFICATION FACTORS?	.5	.6
I 572 13-23	DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE (G, WHICH IS MEASURED IN MHOS)?	.5	.6
I 573 13-24	DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER CALLED AC PLATE RESISTANCE?	.5	.6
I 574 13-25	DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE CAPACITANCE?	.5	1.1
I 575 13-26	DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR WORK WITH ELECTRON TUBES?	.5	1.1
I 576 13-27	DO YOU USE OR REFER TO PLATE VOLTAGE FOR A SPECIFIED BIAS?	.5	1.1
I 577 13-28	DO YOU USE OR REFER TO PLATE CURRENT FOR A SPECIFIED BIAS?	.5	1.1
I 578 13-29	DO YOU USE OR REFER TO BIAS REQUIRED FOR CUTOFF?	1.0	1.7
I 579 13-30	DO YOU USE OR REFER TO BIAS REQUIRED FOR SATURATION?	1.0	1.7
I 580 13-31	DO YOU USE OR REFER TO GAIN?	2.6	3.4
I 581 13-32	DO YOU USE OR REFER TO EFFICIENCY?	.5	3.4

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D TSK	TITLES	205 50 (M)	307 50 (M)
I 582	I3-33 DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN?	.5	2.8
I 583	I3-34 DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN?	1.0	2.8
I 584	I3-35 DO YOU USE CHARACTERISTIC CURVES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN?	1.0	1.7
I 585	I3-36 DO YOU USE OR REFER TO TUBE SOCKET NOTATION?	.5	1.1
I 586	I3-37 DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS?	.5	1.7
I 587	I3-38 DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL SUCH AS MANUALS OR CHARTS?	.5	1.7
I 588	I3-39 DO YOU USE OR REFER TO ELECTRON TUBE DIODES?	.5	1.7
J	ELECTRON TUBE AMPLIFIERS AND CIRCUITS (J1), SPECIAL PURPOSE ELECTRON TUBES (J2), MEYERODYNING AND MODULATION - DEMODULATION (MODENS) (J3)		
J 589	J1-1 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS IN YOUR PRESENT JOB? IF NO, GO TO ITEM J2-1; IF YES, CONTINUE.	2.6	4.0
J 590	J1-2 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS?	.5	1.7
J 591	J1-3 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS?	.0	1.1
J 592	J1-4 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS?	.5	1.7
J 593	J1-5 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS?	.0	1.1
J 594	J1-6 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS?	.0	.0

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 50 (M)	307 50 (M)
J 595	J1-7 DO YOU TROUBLESHOOT OR REPAIR - DON'T KNOW WHICH TYPE OF AMPLIFIER?	1.0	1.1
J 596	J2-1 DO YOU WORK WITH GAS TUBES (HOT CATHODE OR COLD CATHODE)?	1.6	1.7
J 597	J2-2 DO YOU WORK WITH CATHODE-RAY TUBES (CRT)?	63.5	33.3
J 598	J2-3 DO YOU WORK WITH BEAM POWER TUBES?	2.1	2.3
J 599	J2-4 DO YOU WORK WITH THYRATRON?	.5	1.1
J 600	J2-5 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)?	14.6	4.0
J 601	J2-6 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)?	9.9	2.8
J 602	J2-7 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)?	6.8	2.3
J 603	J2-8 DO YOU USE OR REFER TO PHOSPHOR SCREENS CONCERNING CRT'S?	28.1	5.6
J 604	J2-9 DO YOU USE OR REFER TO AQUADAG COATINGS CONCERNING CRT'S?	9.4	1.7
J 605	J2-10 DO YOU USE OR REFER TO ELECTRON OPTICS CONCERNING CRT'S?	5.7	1.7
J 606	J2-11 DO YOU USE OR REFER TO PERSISTENCE CONCERNING CRT'S?	18.2	3.4
J 607	J2-12 DO YOU USE OR REFER TO DECAY TIMES CONCERNING CRT'S?	15.1	4.0
J 608	J2-13 DO YOU USE OR REFER TO FLOURESCENCE CONCERNING CRT'S?	14.6	4.0
J 609	J2-14 DO YOU USE OR REFER TO PHOSPHORESCENCE CONCERNING CRT'S?	17.7	5.6
J 610	J2-15 DO YOU USE OR REFER TO SHADOW MASK CONCERNING CRT'S?	2.1	1.7
J 611	J3-1 DO YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM K1-1; IF YES, CONTINUE.	16.1	58.2
J 612	J3-2 DO YOU PERFORM TASKS ON FREQUENCY CONVERTER SYSTEMS STAGES?	6.3	30.5

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205 307
50 50
(M) (M)

TITLES

4.7 19.0

3.6 54.0
10.4 20.3

2.1 2.3

4.2 10.7

K AM SYSTEMS (K1), FM SYSTEMS (K2), NUMBERING SYSTEMS (K3)

15.1 16.9

3.1 6.2

1.0 .0

3.1 3.4

1.0 16.9

.5 11.9

1.0 2.3

1.0 2.3

7.3 4.0

8.3 6.2

8.3 9.0

5.2 6.8

7.3 5.6

D TSM

J 613 J3-3 DO YOU PERFORM TASKS ON FREQUENCY MIXER SYSTEMS STAGES?

J 614 J3-4 DO YOU PERFORM TASKS ON MODERN SYSTEMS STAGES?

J 615 J3-5 DO YOU USE OR REFER TO THE METERDYNING OF SIGNALS IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS?

J 616 J3-6 DO YOU PERFORM TASKS ON REACTANCE MODULATOR SYSTEM STAGES?

J 617 J3-7 DO YOU PERFORM TASKS ON MODULATED OSCILLATOR SYSTEM STAGES?

K 618 K1-1 DO YOU WORK ON AM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM K2-1; IF YES, CONTINUE.

K 619 K1-2 DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS?

K 620 K1-3 DO YOU CLEAN AM TRANSMIT OR RECEIVE SYSTEMS?

K 621 K1-4 DO YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS?

K 622 K1-5 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS?

K 623 K1-6 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE COMPONENTS?

K 624 K1-7 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE SYSTEMS?

K 625 K1-8 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE COMPONENTS?

K 626 K1-9 DO YOU PERFORM TASKS ON RF OSCILLATORS/SYNTHESIZERS?

K 627 K1-10 DO YOU PERFORM TASKS ON RF AMPLIFIERS?

K 628 K1-11 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS?

K 629 K1-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS?

K 630 K1-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS?

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D TSK	TITLES	205 50 (M)	307 50 (M)
K 654	K2-17 DO YOU PERFORM TASKS ON LIMITERS?	3.6	4.5
K 655	K2-18 DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS?	5.2	2.8
K 656	K2-19 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSMITTERS?	.5	7.3
K 657	K2-20 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM RECEIVERS?	1.0	7.3
K 658	K2-21 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSCIEVERS?	.5	5.6
K 659	K2-22 DO YOU PLOT RECEIVE SIGNAL LEVEL CURVES (RSL)?	.5	12.4
K 660	K3-1 DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL (BASE 8) NUMBERS?	15.1	9.6
K 661	K3-2 DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2) NUMBERS?	25.0	15.3
K 662	K3-3 DO YOU CONVERT DECIMAL NUMBERS TO HEXADECIMAL (BASE 16) NUMBERS?	10.9	3.4
K 663	K3-4 DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS?	16.1	8.5
K 664	K3-5 DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS?	13.0	9.0
K 665	K3-6 DO YOU CONVERT OCTAL NUMBERS TO HEXADECIMAL NUMBERS?	9.4	2.8
K 666	K3-7 DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS?	24.5	11.9
K 667	K3-8 DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS?	13.5	7.9
K 668	K3-9 DO YOU CONVERT BINARY NUMBERS TO HEXADECIMAL NUMBERS?	10.9	2.8
K 669	K3-10 DO YOU CONVERT HEXADECIMAL NUMBERS TO DECIMAL NUMBERS?	12.0	4.0
K 670	K3-11 DO YOU CONVERT HEXADECIMAL NUMBERS TO OCTAL NUMBERS?	9.4	2.8
K 671	K3-12 DO YOU CONVERT HEXADECIMAL NUMBERS TO BINARY NUMBERS?	10.9	2.8
K 672	K3-13 DO YOU ADD BINARY NUMBERS?	19.8	10.7
K 673	K3-14 DO YOU SUBTRACT BINARY NUMBERS USING THE END-AROUND-CARRY METHOD?	4.2	6.2
K 674	K3-15 DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT SUBTRACTION METHOD?	7.8	9.0
K 675	K3-16 DO YOU ADD OCTAL NUMBERS?	6.3	4.5

D TSM	TITLES	205 (M)	307 50 (M)
K 676 K3-17	DO YOU SUBTRACT OCTAL NUMBERS?	6.8	4.5
K 677 K3-18	DO YOU ADD HEXADECIMAL NUMBERS?	6.3	2.3
K 678 K3-19	DO YOU SUBTRACT HEXADECIMAL NUMBERS?	5.7	2.3
K 679 K3-20	DO YOU DIVIDE BINARY NUMBERS?	6.3	5.1
K 680 K3-21	DO YOU MULTIPLY BINARY NUMBERS?	7.3	5.1
K 681 K3-22	DO YOU USE OR REFER TO BINARY CODED DECIMAL (BCD)?	12.0	7.9
K 682 K3-23	DO YOU USE OR REFER TO GRAY CODE?	1.0	2.3
K 683 K3-24	DO YOU USE OR REFER TO IC40 CODE?	2.1	1.1
K 684 K3-25	DO YOU USE OR REFER TO EXCESS-3 CODE?	1.0	.6
L	LOGIC FUNCTIONS (L1), BOOLEAN EQUATIONS (L2), COUNTERS (L3)		
L 685 L1-1	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS? IF NO, GO TO ITEM L2-1; IF YES, CONTINUE.	1.6	1.1
L 686 L1-2	DO YOU CONSTRUCT TRUTH TABLES FOR 'AND' LOGIC SYMBOLS OR GATES?	1.0	.6
L 687 L1-3	DO YOU CONSTRUCT TRUTH TABLES FOR 'OR' LOGIC SYMBOLS OR GATES?	1.0	.6
L 688 L1-4	DO YOU CONSTRUCT TRUTH TABLES FOR 'AND' OR 'OR' LOGIC SYMBOLS WITH STATE INDICATORS?	1.0	.6
L 689 L1-5	DO YOU CONSTRUCT TRUTH TABLES FOR 'EXCLUSIVE OR' LOGIC SYMBOLS OR GATES?	1.0	.6
L 690 L1-6	DO YOU USE OR REFER TO TRUTH TABLES FOR 'AND' LOGIC SYMBOLS OR GATES?	1.0	.6
L 691 L1-7	DO YOU USE OR REFER TO TRUTH TABLES FOR 'OR' LOGIC SYMBOLS OR GATES?	1.0	.6
L 692 L1-8	DO YOU USE OR REFER TO TRUTH TABLES FOR 'AND' OR 'OR' LOGIC SYMBOLS WITH STATE INDICATORS?	1.0	.6

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D TSK	TITLES	205 50 (M)	307 50 (M)
L 693	L1-9 DO YOU USE OR REFER TO TRUTH TABLES FOR 'EXCLUSIVE OR' LOGIC SYMBOLS?	1.0	.6
L 694	L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'AND' GATES?	1.0	1.1
L 695	L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'OR' GATES?	1.0	1.1
L 696	L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'NAND' OR 'NOR' GATES?	.5	1.1
L 697	L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'EXCLUSIVE OR' GATES?	1.0	1.1
L 698	L1-14 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR INHIBITED 'AND' GATES?	.5	.6
L 699	L1-15 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'B' BARS?	.5	.0
L 700	L1-16 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'M' BARS?	.5	.0
L 701	L1-17 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR COMBINERS?	.5	.6
L 702	L1-18 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS?	1.0	.6
L 703	L1-19 DO YOU USE OR REFER TO ONE-SHOT MULTIVIBRATOR SYMBOLS?	.5	.6
L 704	L1-20 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT OR SCHEMATIC DIAGRAMS?	.5	.6
L 705	L1-21 DO YOU USE OR REFER TO ONE-SHOT CIRCUIT OR SCHEMATIC DIAGRAMS?	.5	.6
L 706	L1-22 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES?	.5	.6
L 707	L1-23 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS?	.5	.6
L 708	L1-24 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS?	.0	.6
L 709	L1-25 DO YOU USE OR REFER TO NONCOMPLEMENTED FLIP-FLOP LOGIC SYMBOLS?	.0	.6
L 710	L1-26 DO YOU CONSTRUCT TRUTH TABLES FOR 'B' BARS?	.5	.0
L 711	L1-27 DO YOU CONSTRUCT TRUTH TABLES FOR 'M' BARS?	.5	.0
L 712	L1-28 DO YOU CONSTRUCT TRUTH TABLES FOR COMBINERS?	.5	.6

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D TSM	TITLES	205 50 (M)	307 50 (M)
L 713	L1-29 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS?	1.0	1.1
L 714	L1-30 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS?	.5	.0
L 715	L1-31 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS?	1.0	.6
L 716	L1-32 DO YOU TRACE DATA FLOW THROUGH NONCOMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS?	1.0	.0
L 717	L1-33 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS?	.0	.0
L 718	L2-1 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS? IF NO, GO TO ITEM L3-1; IF YES, CONTINUE.	.5	.6
L 719	L2-2 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS?	.5	.0
L 720	L2-3 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS?	.0	.0
L 721	L2-4 DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS?	.0	.6
L 722	L2-5 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES?	.5	.6
L 723	L2-6 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS?	.5	.6
L 724	L2-7 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA?	.0	.6
L 725	L2-8 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES?	.5	.0
L 726	L2-9 DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS?	.0	.0
L 727	L2-10 DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE?	.5	.0
L 728	L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS?	.5	1.1

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D TSK	TITLES	205 (M)	307 50 (M)
L 729	L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS?	.5	.6
L 730	L3-1 DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB?	18.2	11.3
	IF NO, GO TO ITEM MI-1; IF YES, CONTINUE.		
L 731	L3-2 DO YOU USE OR REFER TO UP-COUNTERS?	6.8	4.5
L 732	L3-3 DO YOU USE OR REFER TO DOWN-COUNTERS?	4.2	3.4
L 733	L3-4 DO YOU USE OR REFER TO SERIAL COUNTERS?	3.1	2.8
L 734	L3-5 DO YOU USE OR REFER TO PARALLEL COUNTERS?	2.1	4.5
L 735	L3-6 DO YOU USE OR REFER TO RING COUNTERS?	1.6	.6
L 736	L3-7 DO YOU USE OR REFER TO DECADE (MOD 10) COUNTERS?	2.6	1.1
L 737	L3-8 DO YOU USE OR REFER TO COUNT DETECT CIRCUITS?	3.6	5.1
L 738	L3-9 DO YOU USE OR REFER TO DOWN CLOCKS?	3.1	3.4
L 739	L3-10 DO YOU USE OR REFER TO UP CLOCKS?	5.7	2.8
L 740	L3-11 DO YOU USE OR REFER TO OTHER MODULOUS COUNTERS?	5.2	3.4
L 741	L3-12 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-COUNTERS?	1.0	1.1
L 742	L3-13 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DOWN-COUNTERS?	1.0	1.1
L 743	L3-14 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-DOWN COUNTERS?	.5	1.1
L 744	L3-15 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DECADE COUNTERS?	.5	1.1
L 745	L3-16 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF RING COUNTERS?	.5	.6
L 746	L3-17 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF COUNTERS FEEDING STORAGE REGISTERS?	1.6	.6
L 747	L3-18 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS?	1.0	.6
L 748	L3-19 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF COUNTERS?	2.1	2.3

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205 307
50 50
(M) (M)

O TSK TITLES

L 749 L3-20 DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF
DECADE COUNTERS?
L 750 L3-21 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING
COUNTERS FOR SPECIFIC INPUT PULSES?
L 751 L3-22 DO YOU DETERMINE THE APPROPRIATE 'AND' GATE NECESSARY
IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT?

M TIMING CIRCUITS (M1), USE OF SIGNAL GENERATORS (M2), MOTORS
AND GENERATORS (M3)

M 752 M1-1 DO YOU WORK WITH SAWTOOTH WAVE GENERATOR TIMING
CIRCUITS? 16.1 6.0
M 753 M1-2 DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATOR TIMING
CIRCUITS? 1.6 3.4
M 754 M1-3 DO YOU WORK WITH PULSED OSCILLATOR TIMING CIRCUITS? 13.0 10.2
M 755 M1-4 DO YOU WORK WITH BLOCKING OSCILLATOR TIMING CIRCUITS? 2.1 5.1
M 756 M1-5 DO YOU WORK WITH MASTER STATION TIMING CIRCUITS? 3.6 33.9
M 757 M1-6 DO YOU USE OR REFER TO RISE TIME? 28.1 7.9
M 758 M1-7 DO YOU USE OR REFER TO FALL OR FLYBACK TIME? 26.6 5.1
M 759 M1-8 DO YOU USE OR REFER TO SWEEP TIME? 26.6 18.1
M 760 M1-9 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH
WAVEFORMS? 9.4 5.6
M 761 M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH
WAVEFORMS? 8.9 5.1
M 762 M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH
WAVEFORMS? 6.8 2.8
M 763 M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH
WAVEFORMS? 6.8 3.4

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D TSK	TITLES	205 SO (M)	307 SO (P)
M 764 M2-1	DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M3-1; IF YES, CONTINUE.	10.2	75.7
M 765 M2-2	DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS?	9.4	66.7
M 766 M2-3	DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS?	1.0	21.5
M 767 M2-4	DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS?	.5	16.9
M 768 M2-5	DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS?	.0	3.4
M 769 M2-6	DO YOU USE AUDIO SINE-WAVE GENERATORS?	8.9	61.6
M 770 M2-7	DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE?	10.9	13.6
M 771 M2-8	DO YOU USE RF GENERATORS LESS THAN 1,000 MHZ?	9.9	17.5
M 772 M2-9	DO YOU USE RF GENERATORS GREATER THAN 1,000 MHZ?	8.9	5.6
M 773 M2-10	DO YOU USE WHITE NOISE GENERATORS?	2.1	6.8
M 774 M2-11	DO YOU USE PATTERN GENERATORS?	2.6	66.1
M 775 M2-12	DO YOU USE PSEUDO-RANDOM GENERATORS?	3.1	23.7
M 776 M2-13	DO YOU USE TIME MARK GENERATORS?	10.9	9.0
M 777 M2-14	DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION GENERATORS?	0.3	20.3
M 778 M3-1	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS, GENERATORS (SERVO), OR ALTERNATORS? IF NO, GO TO ITEM M1-1; IF YES, CONTINUE.	1.6	.6
M 779 M3-2	DO YOU INSPECT MOTORS?	.0	.6
M 780 M3-3	DO YOU CLEAN OR LUBRICATE MOTORS?	.5	.0
M 781 M3-4	DO YOU OPERATE MOTORS?	1.0	.6
M 782 M3-5	DO YOU REPAIR OR REPLACE COMPLETE MOTORS?	.5	.0
M 783 M3-6	DO YOU REMOVE OR REPLACE MOTOR PARTS?	.5	.0

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 50 (M)	307 50 (M)
M 784	M3-7 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF MOTORS?	.5	.0
M 785	M3-8 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS?	.0	.0
M 786	M3-9 DO YOU PERFORM TASKS ON MOTOR FIELD COILS?	.5	.0
M 787	M3-10 DO YOU PERFORM ANY TASKS ON MOTOR ARMATURES?	.5	.0
M 788	M3-11 DO YOU PERFORM ANY TASKS ON MOTOR ROTORS?	.5	.0
M 789	M3-12 DO YOU PERFORM ANY TASKS ON MOTOR BRUSHES?	.5	.0
M 790	M3-13 DO YOU PERFORM ANY TASKS ON MOTOR SLIP RINGS?	.0	.0
M 791	M3-14 DO YOU PERFORM ANY TASKS ON MOTOR COMMUTATORS?	.0	.0
M 792	M3-15 DO YOU PERFORM ANY TASKS ON MOTOR POLE PIECES?	.5	.0
M 793	M3-16 DO YOU DETERMINE OR MEASURE FORCE OR TORQUE CREATED BY A MOTOR?	.5	.0
M 794	M3-17 DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR?	.5	.0
M 795	M3-18 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS?	.5	.0
M 796	M3-19 DO YOU WORK WITH SYNCHRONOUS MOTORS?	.0	.6
M 797	M3-20 DO YOU WORK WITH INDUCTION MOTORS?	.5	.0
M 798	M3-21 DO YOU WORK WITH SPLIT-PHASE MOTORS?	.5	.6
M 799	M3-22 DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS?	1.0	.6
M 800	M3-23 DO YOU WORK WITH SERVOS OR SYNCHROS MOTORS?	1.0	.0
M 801	M3-24 DO YOU WORK WITH SHADED-POLE MOTORS?	.5	.0
M 802	M3-25 DO YOU INSPECT GENERATORS OR ALTERNATORS?	.5	.6
M 803	M3-26 DO YOU CLEAN OR LUBRICATE GENERATORS OR ALTERNATORS?	.5	.0
M 804	M3-27 DO YOU OPERATE GENERATORS OR ALTERNATORS?	1.0	.6
M 805	M3-28 DO YOU REMOVE OR REPLACE COMPLETE GENERATORS OR ALTERNATORS?	.5	.0
M 806	M3-29 DO YOU REMOVE OR REPLACE GENERATOR, ALTERNATOR, OR PARTS?	.5	.0

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205	307
50	50
(M)	(P)

D TSM TITLES

M 807 M3-30 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS OR ALTERNATORS?

M 808 M3-31 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS OR ALTERNATORS?

.5	.0
.5	.0

M METER MOVEMENTS (N1), SATURABLE REACTORS AND MAGNETIC AMPLIFIERS (N2), WAVESHAPING CIRCUITS (N3)

M 809 N1-1 DO YOU WORK WITH METERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM N2-1; IF YES, CONTINUE.

6.3	73.4
-----	------

M 810 N1-2 DO YOU CONSIDER THE FUNCTIONS OF PERMANENT MAGNET INTERNAL METER PARTS?

.5	5.1
----	-----

M 811 N1-3 DO YOU CONSIDER THE FUNCTIONS OF MOVING COIL INTERNAL METER PARTS?

.5	5.1
----	-----

M 812 N1-4 DO YOU CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS INTERNAL METER PARTS?

.0	4.0
----	-----

M 813 N1-5 DO YOU READ METER SCALES?

5.7	71.8
-----	------

M 814 N1-6 DO YOU EXTEND THE RANGE OF AMMETERS?

.5	17.5
----	------

M 815 N1-7 DO YOU EXTEND THE RANGE OF VOLTMETERS?

.5	25.4
----	------

M 816 N1-8 DO YOU ZERO OHMMETERS?

1.0	41.8
-----	------

M 817 N1-9 DO YOU ZERO AMMETERS?

1.0	19.8
-----	------

M 818 N1-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLTT)?

1.0	15.8
-----	------

M 819 N1-11 DO YOU CONSIDER BALLASTIC RESPONSE OF METER MOVEMENTS?

1.0	4.0
-----	-----

M 820 N1-12 DO YOU CONSIDER OTHER METER MOVEMENTS?

2.1	23.2
-----	------

M 821 J2-1 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM N3-1; IF YES, CONTINUE.

1.0	.0
-----	----

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O TSM	TITLES	205	307
		(M)	(P)
N 022	N2-2 DO YOU INSPECT SATURABLE PEACTORS OR MAGNETIC AMPLIFIER?	.0	.0
N 023	N2-3 DO YOU CLEAN SATURABLE REACTORS OR MAGNETIC AMPLIFIER?	.0	.0
N 024	N2-4 DO YOU ADJUST SATURABLE REACTORS OR MAGNETIC AMPLIFIER?	.0	.0
N 025	N2-5 DO YOU TROUBLESHOOT SATURABLE REACTORS OR MAGNETIC AMPLIFIER?	.0	.0
N 026	N2-6 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS?	.0	.0
N 027	N2-7 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS?	.0	.0
N 028	N2-8 DO YOU USE OR REFER TO HISTERESIS CURVES OR LOOPS?	.0	.0
N 029	N2-9 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SATURABLE REACTORS?	.0	.0
N 030	N2-10 DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SATURABLE REACTORS?	.0	.0
N 031	N2-11 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS FOR MAGNETIC AMPLIFIERS?	.0	.0
N 032	N2-12 DO YOU USE OR REFER TO SATURABLE REACTOR SCHEMATIC SYMBOLS?	.0	.0
N 033	N3-1 DO YOU WORK WITH WAVESHAPING CIRCUITS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 01-1; IF YES, CONTINUE.	30.2	10.2
N 034	N3-2 DO YOU USE OR REFER TO TRANSIENT INTERVALS (RISE TIME AND FALL TIME)?	24.5	5.6
N 035	N3-3 DO YOU USE OR REFER TO PULSE WIDTH (PW)?	31.8	7.3
N 036	N3-4 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)?	29.2	6.2
N 037	N3-5 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)?	31.3	6.2
N 038	N3-6 DO YOU USE OR REFER TO DIFFERENTIATING CIRCUITS?	2.1	2.8

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D	TSK	TITLES	205 (M)	307 SO (M)
N 839	N3-7	DO YOU USE OR REFER TO INTEGRATING CIRCUITS?	2.1	5.1
N 840	N3-8	DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT?	3.1	4.5
N 841	N3-9	DO YOU DETERMINE WHETHER AN LP OR RC CIRCUIT IS DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT AND OUTPUT CONFIGURATION?	.0	1.7
N 842	N3-10	DO YOU WORK WITH SQUARE WAVE GENERATOR SOLID STATE CIRCUITS?	9.9	9.0
N 843	N3-11	DO YOU WORK WITH RECTANGULAR WAVE GENERATOR SOLID STATE CIRCUITS?	3.6	4.5
N 844	N3-12	DO YOU WORK WITH TRIANGULAR (SAWTOOTH) WAVE GENERATOR SOLID STATE CIRCUITS?	11.5	2.8
N 845	N3-13	DO YOU WORK WITH RAMP (TRAPEZOIDAL) GENERATOR SOLID STATE CIRCUITS?	1.0	1.7
N 846	N3-14	DO YOU WORK WITH FUNCTION GENERATOR SOLID STATE CIRCUITS?	4.2	5.1
N 847	N3-15	DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS?	1.0	2.3
N 848	N3-16	DO YOU ALIGN OF ADJUST WAVE GENERATING OR SHAPING CIRCUITS?	.5	1.1
N 849	N3-17	DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS?	1.0	.6
N 850	N3-18	DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS?	.0	3.4
N 851	N3-19	DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS?	.0	2.3
N 852	N3-20	DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS?	.0	1.1
N 853	N3-21	DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS?	.0	.0

205 307
50 50
(M) (M)

D TSK TITLES

0 SINGLE OR INDEPENDENT SIDEBAND SYSTEMS (01), PULSE
MODULATION SYSTEMS (02), ANTENNAS (03)

0 854 01-1 DO YOU WORK ON SINGLE OR INDEPENDENT SIDEBAND SYSTEMS
IN YOUR PRESENT JOB? IF NO, GO TO ITEM 02-1; IF YES,
CONTINUE.

0 855 01-2 DO YOU INSPECT SINGLE SIDE BAND (SSB) OR INDEPENDENT
SIDEBAND (ISB) TRANSMIT OR RECEIVE SYSTEMS?

0 856 01-3 DO YOU CLEAN SINGLE SIDE BAND (SSB) OR INDEPENDENT
SIDEBAND (ISB) TRANSMIT OR RECEIVE SYSTEMS?

0 857 01-4 DO YOU ALIGN SINGLE SIDE BAND (SSB) OR INDEPENDENT
SIDEBAND (ISB) TRANSMIT OR RECEIVE SYSTEMS?

0 858 01-5 DO YOU TROUBLESHOOT TO SINGLE SIDE BAND (SSB) OR
INDEPENDENT SIDEBAND (ISB) TRANSMIT OR RECEIVE SYSTEMS?

0 859 01-6 DO YOU TROUBLESHOOT TO SINGLE SIDE BAND (SSB) OR
INDEPENDENT SIDEBAND (ISB) TRANSMIT OR RECEIVE COMPONENTS?

0 860 01-7 DO YOU REMOVE OR REPLACE SINGLE SIDE BAND (SSB) OR
INDEPENDENT SIDEBAND (ISB) TRANSMIT OR RECEIVE SYSTEMS?

0 861 01-8 DO YOU REMOVE OR REPLACE SINGLE SIDE BAND (SSB) OR
INDEPENDENT SIDEBAND (ISB) TRANSMIT OR RECEIVE COMPONENTS?

0 862 01-9 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR RECEIVE
SYSTEM, AUDIO, AMPLIFIER, STAGE?

0 863 01-10 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM BALANCED MODULATOR STAGE?

0 864 01-11 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM CARRIER OSCILLATOR STAGE?

0 865 01-12 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM LC FILTER STAGE?

0 866 01-13 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM CRYSTAL FILTER STAGE?

0 867 01-14 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM MECHANICAL FILTER STAGE?

0 868 01-15 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM OSCILLATOR STAGE?

0 869 01-16 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM MIXER STAGE?

0 870 01-17 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM DRIVER STAGE?

0 871 01-18 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM POWER AMPLIFIER STAGES?

0 872 01-19 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM RF AMPLIFIER STAGE?

0 873 01-20 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM FREQUENCY CONVERTER STAGES?

0 874 01-21 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM IF AMPLIFIER STAGE?

0 875 01-22 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM DEMODULATOR STAGE?

0 876 01-23 DO YOU USE OR REFER TO SELECTIVE FADING WHEN WORKING
WITH SSB TRANSMIT OR RECEIVE SYSTEMS?

6.0 26.0

1.6 9.6

.5 .0

.5 4.0

.0 24.9

.0 6.2

.0 3.4

.0 .6

2.1 6.8

1.0 3.4

2.1 2.3

1.0 1.7

.5 .0

1.0 .0

3.1 5.6

2.1 2.8

1.0 1.1

1.0 2.8

3.6 4.0

3.1 4.0

2.1 3.4

4.2 5.6

1.6 10.7

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O TSK	TITLES	205 50 (M)	307 50 (M)
0 877	01-24 DO YOU USE OR REFER TO PEAK POWER WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?	1.6	12.4
0 878	01-25 DO YOU USE OR REFER TO FREQUENCY STABILITY WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?	3.1	11.3
0 879	01-26 DO YOU USE OR REFER TO RESPONSE CURVES FOR BANDWIDTH FILTERS WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?	1.6	7.9
0 880	01-27 DO YOU CALCULATE PEAK POWER OR EFFECTIVE POWER OF SSB OR ISB TRANSMITTERS?	1.0	4.0
0 881	01-28 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB OR ISB TRANSMITTER SCHEMATIC DIAGRAMS?	.5	2.0
0 882	01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB OR ISB RECEIVER SCHEMATIC DIAGRAMS?	.5	3.4
0 883	01-30 DO YOU PERFORM AERONAUTIC STATION ASSESSMENT PROGRAMS (ASAP)?	.0	4.5
0 884	02-1 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 03-1; IF YES, CONTINUE.	15.6	20.9
0 885	02-2 DO YOU INSPECT PULSE MODULATION SYSTEMS?	.5	4.5
0 886	02-3 DO YOU CLEAN PULSE MODULATION SYSTEMS?	.0	.0
0 887	02-4 DO YOU ALIGN PULSE MODULATION SYSTEMS?	.5	2.3
0 888	02-5 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS?	.0	18.6
0 889	02-6 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM COMPONENTS?	.0	6.2
0 890	02-7 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS?	.0	2.3
0 891	02-8 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM COMPONENTS?	.0	.6
0 892	02-9 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM) PULSE MODULATION SYSTEMS?	12.5	9.6
0 893	02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM) PULSE MODULATION SYSTEMS?	11.5	2.3
0 894	02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM) PULSE MODULATION SYSTEMS?	13.0	3.4
0 895	02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) PULSE MODULATION SYSTEMS?	12.5	19.2
0 896	02-13 DO YOU WORK ON LINE PULSING MODULATION PULSE MODULATION SYSTEMS?	.5	.6
0 897	02-14 DO YOU WORK ON TIME DIVISION MULTIPLEXING (TDM) PULSE MODULATION SYSTEMS?	9.4	20.3
0 898	02-15 DO YOU WORK ON - DON'T KNOW WHICH TYPE OF MODULATION SYSTEM?	3.1	1.1
0 899	02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLY STAGE?	2.1	.6
0 900	02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHOKES AND CHARGING DIODE STAGE?	.5	.0
0 901	02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORK STAGE?	1.0	.6
0 902	02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMER STAGE?	3.1	1.1
0 903	02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATRON STAGE?	.5	.0

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D TSK	TITLES	205	307
0 904	02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMER STAGE?	.5	.6
0 905	02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBE STAGE?	.5	.6
0 906	02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIER STAGE?	4.7	.6
0 907	02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTER STAGE?	4.7	2.8
0 908	02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIER STAGE?	4.2	1.1
0 909	02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTOR STAGE?	4.2	1.1
0 910	02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIER STAGE?	4.7	.0
0 911	02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIER STAGE?	3.1	.6
0 912	02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	17.7	2.8
0 913	02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	15.1	2.8
0 914	02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	17.7	5.6
0 915	02-32 DO YOU USE OR REFER TO PULSE SHAPE WHEN WORKING WITH PULSE MODULATION SYSTEMS?	12.0	3.4
0 916	02-33 DO YOU USE OR REFER TO PEAK POWER WHEN WORKING WITH PULSE MODULATION SYSTEMS?	7.8	4.5
0 917	02-34 DO YOU USE OR REFER TO AVERAGE POWER WHEN WORKING WITH PULSE MODULATION SYSTEMS?	7.3	4.5
0 918	02-35 DO YOU USE OR REFER TO DUTY CYCLE (DC) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	6.8	2.3
0 919	02-36 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)?	14.1	1.1
0 920	02-37 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)?	14.1	1.1
0 921	02-38 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS?	4.2	2.3
0 922	02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS?	1.0	2.3
0 923	02-40 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS?	1.0	2.3
0 924	03-1 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB? IF NO, GO TO ITEM PI-1; IF YES, CONTINUE.	22.4	13.6
0 925	03-2 DO YOU INSPECT ANTENNAS?	1.6	1.1
0 926	03-3 DO YOU CLEAN ANTENNAS?	.5	.6
0 927	03-4 DO YOU PHYSICALLY ALIGN ANTENNAS?	.5	1.1
0 928	03-5 DO YOU ELECTRICALLY ALIGN ANTENNAS?	1.6	1.7
0 929	03-6 DO YOU TROUBLESHOOT TO ANTENNAS?	.0	9.6
0 930	03-7 DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS?	.0	.0
0 931	03-8 DO YOU REMOVE OR INSTALL ANTENNAS?	1.0	1.7

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Q TSK	TITLES	205 (M)	307 50 (M)
0 932	03-9 DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS?	.5	.0
0 933	03-10 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF E OR ELECTRIC FIELD LINES?	3.1	1.7
0 934	03-11 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF H OR MAGNETIC FIELD LINES?	3.1	1.7
0 935	03-12 DO YOU DETERMINE THE DIRECTION OF THE MAGNETIC LINES IN RELATION TO THE ELECTRIC LINES OF FORCE FOR ANTENNAS?	3.6	1.1
0 936	03-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE OF CORRECT LENGTH (HALF-WAVE) ACT AS RESISTIVE LOADS TO THE GENERATOR?	.5	1.7
0 937	03-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE LONGER THAN A HALF-WAVE ACT AS INDUCTIVE LOADS TO THE GENERATOR?	.5	1.1
0 938	03-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE SHORTER THAN A HALF-WAVE ACT AS CAPACITIVE LOADS TO THE GENERATOR?	.5	.6
0 939	03-16 DO YOU WORK WITH HERTZ BASIC ANTENNAS?	1.0	.6
0 940	03-17 DO YOU WORK WITH MARCONI BASIC ANTENNAS?	1.0	1.1
0 941	03-18 DO YOU WORK WITH RHOMBIC BASIC ANTENNAS?	2.6	8.5
0 942	03-19 DO YOU WORK WITH DIPOLE BASIC ANTENNAS?	5.7	8.5
0 943	03-20 DO YOU WORK WITH SCIMITAR BASIC ANTENNAS?	.5	.0
0 944	03-21 DO YOU WORK WITH PARABOLIC BASIC ANTENNAS?	15.6	10.2
0 945	03-22 DO YOU WORK WITH GROUND PLANE BASIC ANTENNAS?	2.6	3.4
0 946	03-23 DO YOU WORK WITH FOLDED DIPOLE BASIC ANTENNAS?	3.6	2.3
0 947	03-24 DO YOU WORK WITH BROADSIDE ARRAYS?	2.6	.6
0 948	03-25 DO YOU WORK WITH END-FIRE ARRAYS?	2.1	.6
0 949	03-26 DO YOU WORK WITH CAROID ARRAYS?	2.6	.0
0 950	03-27 DO YOU WORK WITH COLLINER ARRAYS?	3.1	.0
0 951	03-28 DO YOU WORK WITH PHASE ARRAYS?	6.3	1.1
0 952	03-29 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC INDUCTION FIELDS WHEN WORKING WITH ANTENNAS?	3.1	1.7
0 953	03-30 DO YOU MEASURE ELECTROMAGNETIC INDUCTION FIELDS OF ANTENNAS?	1.6	.0
0 954	03-31 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC RADIATION FIELDS WHEN WORKING WITH ANTENNAS?	7.3	1.7
0 955	03-32 DO YOU MEASURE ELECTROMAGNETIC RADIATION FIELDS OF ANTENNAS?	2.6	.0
0 956	03-33 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA RADIATION?	2.6	.0
0 957	03-34 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA INDUCTION FIELD?	2.1	.0
0 958	03-35 ARE ANY OF THE ANTENNAS YOU WORK ON LINEARLY POLARIZED?	8.9	1.7
0 959	03-36 ARE ANY OF THE ANTENNAS YOU WORK ON CIRCULARLY POLARIZED?	6.3	.6
0 960	03-37 DO YOU MEASURE OR DETERMINE THE POLARITY OF ANTENNAS YOU WORK ON?	7.3	.0

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205	307
50	50
(M)	(M)
1.6	1.1
4.2	1.1
3.1	1.1
9.9	6.2
12.5	10.7
5.7	3.4
10.4	7.3
6.3	2.8

O TSK TITLES

O 961 03-38 DO YOU CONSTRUCT, OR MAKE THE CALCULATIONS NECESSARY TO CONSTRUCT ANTENNAS OF CORRECT LENGTH FOR SPECIFIC WAVELENGTHS?

O 962 03-39 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS?

O 963 03-40 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS?

O 964 03-41 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN - DON'T KNOW WHAT KIND OF ELEMENT?

O 965 03-42 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS?

O 966 03-43 DO YOU WORK ON BIDIRECTIONAL ANTENNAS?

O 967 03-44 DO YOU WORK ON OMNIDIRECTIONAL ANTENNAS?

O 968 03-45 DO YOU WORK WITH ROTARY ANTENNA ARRAYS?

P TRANSMISSION LINES (P1), WAVEGUIDES AND CAVITY RESONATORS (P2), MICROWAVE AMPLIFIERS AND OSCILLATORS (P3)

P 969 P1-1 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES? (DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES.) IF NO, GO TO ITEM P2-1; IF YES, CONTINUE.

P 970 P1-2 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE COPPER LOSS OR $\frac{1}{2}$ SUB 2 R* LOSS IN TRANSMISSION LINES?

P 971 P1-3 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN TRANSMISSION LINES?

P 972 P1-4 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE RADIATION LOSS?

P 973 P1-5 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE DIELECTRIC LOSS?

P 974 P1-6 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE LEAKAGE LOSSES?

P 975 P1-7 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE FARADAY SHIELD?

P 976 P1-8 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES?

P 977 P1-9 DO YOU WORK WITH TWIN LEAD TRANSMISSION LINES?

P 978 P1-10 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES?

P 979 P1-11 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION LINES?

P 980 P1-12 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES?

P 981 P1-13 DO YOU TROUBLESHOOT TRANSMISSION LINES?

P 982 P1-14 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)?

P 983 P1-15 DO YOU SELECT APPROPRIATE TRANSMISSION LINE TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS?

3.1	42.9
.0	2.8
.0	2.8
1.0	8.5
.5	6.2
.5	8.5
.0	.6
.5	27.1
.0	15.8
.0	16.4
1.6	27.1
1.0	10.7
.5	42.9
.0	24.3
1.0	12.4

D TSM	TITLES	205 (M)	307 (P)
P 984	PI-16 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS?	.0	8.5
P 985	PI-17 DO YOU MEASURE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES?	.0	2.3
P 986	PI-18 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES?	.5	1.7
P 987	PI-19 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS?	.5	2.8
P 988	PI-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING MATCHING TRANSFORMERS?	.0	14.7
P 989	PI-21 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING DELTA MATCHING?	.0	1.1
P 990	PI-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC IMPEDANCE (ZO) OF TRANSMISSION LINES?	1.6	10.7
P 991	PI-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (ZO) OF TRANSMISSION LINES?	.5	6.2
P 992	PI-24 DO YOU USE OR REFER TO THE TERM CUI OF FREQUENCY OF TRANSMISSION LINES?	1.0	9.6
P 993	PI-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K) OF TRANSMISSION LINES?	1.0	1.1
P 994	PI-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION LINES FOR PARTICULAR FREQUENCIES?	.5	2.8
P 995	PI-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR ELECTRICAL LENGTHS FOR GIVEN FREQUENCIES?	.0	1.7
P 996	PI-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH INCREASES?	.0	6.2
P 997	PI-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION LINES?	.0	7.9
P 998	PI-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES?	.0	11.3
P 999	PI-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING STUB MATCHING?	.0	3.4
P1000	P2-1 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM P3-1; IF YES, CONTINUE.	1.0	1.1
P1001	P2-2 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1002	P2-3 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1003	P2-4 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1004	P2-5 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1005	P2-6 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS?	.0	.6
P1006	P2-7 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES?	.0	.0
P1007	P2-8 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS?	.0	.0
P1008	P2-9 DO YOU REMOVE OR INSTALL DUMMY LOADS?	.0	.0
P1009	P2-10 DO YOU REMOVE OR INSTALL BENDS?	.0	.0
P1010	P2-11 DO YOU REMOVE OR INSTALL BENDS?	.0	.0
P1011	P2-12 DO YOU REMOVE OR INSTALL OTHER BENDS?	.0	.0

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D TSM	TITLES	205 50 (M)	307 50 (M)
P1012	P2-13 DO YOU REMOVE OR INSTALL CHOKES JOINTS?	.0	.0
P1013	P2-14 DO YOU REMOVE OR INSTALL ROTATING JOINTS?	.0	.0
P1014	P2-15 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS?	.0	.0
P1015	P2-16 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS?	.0	.0
P1016	P2-17 DO YOU REMOVE OR INSTALL DUPLEXERS OR MIXERS?	.0	.0
P1017	P2-18 DO YOU REMOVE OR INSTALL WAVEGUIDE SHUTTERS?	.0	.0
P1018	P2-19 DO YOU REMOVE OR INSTALL TRANSMIT (TR) OR ANTITRANSMIT (ATR) TUBES?	.0	.0
P1019	P2-20 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES?	.0	.0
P1020	P2-21 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES?	.0	.0
P1021	P2-22 DO YOU USE OR REFER TO CUT OFF FREQUENCY OF WAVEGUIDES?	.0	.0
P1022	P2-23 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES?	.0	.0
P1023	P2-24 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES?	.0	.0
P1024	P2-25 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS?	.0	.0
P1025	P2-26 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS?	.0	.0
P1026	P2-27 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS?	.0	.0
P1027	P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OR .7 WAVELENGTHS OF THE OPERATING FREQUENCY?	.0	.0
P1028	P2-29 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 AS AN AVERAGE?	.0	.0
P1029	P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION?	.0	.0
P1030	P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES?	.0	.0
P1031	P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES?	.0	.0
P1032	P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES?	.0	.0
P1033	P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES?	.0	.0
P1034	P2-35 DO YOU WORK WITH HIGH POWER PROBE ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1035	P2-36 DO YOU WORK WITH LOW POWER PROBE ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1036	P2-37 DO YOU WORK WITH LOOP ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1037	P2-38 DO YOU WORK WITH APERTURES (WINDOWS OR IRISES) ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1038	P2-39 DO YOU WORK WITH CHOKES JOINTS IN WAVEGUIDES OR CAVITY RESONATORS?	.0	.0

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D TSM	TITLES	205 (H)	307 (M)
P1039	P2-40 DO YOU WORK WITH ROTATING JOINTS IN WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1040	P2-41 DO YOU WORK WITH JOINTS IN WAVEGUIDES OR CAVITY RESONATORS BUT DON'T KNOW WHICH KIND?	.0	.6
P1041	P2-42 DO YOU TUNE CAVITY RESONATORS USING ELECTRICAL METHODS?	.0	.0
P1042	P2-43 DO YOU TUNE CAVITY RESONATORS USING MECHANICAL METHODS?	.0	.0
P1043	P2-44 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY RESONATORS?	.0	.0
P1044	P3-1 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS, TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR MAGNETRONS? IF NO, GO TO ITEM D1-1; IF YES, CONTINUE.	2.1	2.3
P1045	P3-2 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	.0	.6
P1046	P3-3 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	.0	.6
P1047	P3-4 DO YOU USE OR REFER TO LEAD INDUCTANCE FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	.5	.6
P1048	P3-5 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL CIRCUITRY FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	.5	.6
P1049	P3-6 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY MODULATION?	.0	1.1
P1050	P3-7 DO YOU USE OR REFER TO ELECTRON BUNCHING?	.0	1.1
P1051	P3-8 DO YOU WORK WITH TWO-CAVITY KLYSTRONS?	.0	1.1
P1052	P3-9 DO YOU WORK WITH THREE-CAVITY KLYSTRONS?	.0	1.1
P1053	P3-10 DO YOU WORK WITH REFLEX KLYSTRONS?	.0	1.7
P1054	P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)?	.5	1.7
P1055	P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC AMPLIFIERS?	.0	.6
P1056	P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS?	.5	1.7
P1057	P3-14 DO YOU WORK WITH MAGNETRONS?	1.0	1.1
P1058	P3-15 DO YOU WORK WITH BACKWARD WAVE OSCILLATORS (BWO)?	.0	.6
P1059	P3-16 DO YOU INSPECT KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	.0	.0
P1060	P3-17 DO YOU CLEAN KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	.0	.0
P1061	P3-18 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY?	.0	.0
P1062	P3-19 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY?	.0	.6
P1063	P3-20 DO YOU PERFORM OPERATIONAL CHECKS ON KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	.0	.6
P1064	P3-21 DO YOU TROUBLESHOOT KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	.0	1.1
P1065	P3-22 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRONS OR TWT'S?	.0	.0
P1066	P3-23 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS?	.0	.6
P1067	P3-24 DO YOU INSPECT PARAMETRIC AMPLIFIERS?	.0	.0

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D TSM	TITLES	205 50 (M)	307 50 (M)
P1068	P3-25 DO YOU CLEAN PARAMETRIC AMPLIFIERS?	.0	.0
P1069	P3-26 DO YOU ADJUST PARAMETRIC AMPLIFIERS?	.0	.6
P1070	P3-27 DO YOU TUNE PARAMETRIC AMPLIFIERS?	.0	.6
P1071	P3-28 DO YOU PERFORM OPERATIONAL CHECKS ON PARAMETRIC AMPLIFIERS?	.0	.6
P1072	P3-29 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS?	.0	1.1
P1073	P3-30 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIERS?	.0	.6
P1074	P3-31 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS?	.0	.6
P1075	P3-32 DO YOU INSPECT MAGNETRONS?	.0	.0
P1076	P3-33 DO YOU CLEAN MAGNETRONS?	.0	.0
P1077	P3-34 DO YOU ADJUST MAGNETRONS?	.0	.6
P1078	P3-35 DO YOU TUNE MAGNETRONS?	.0	.6
P1079	P3-36 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS?	.0	.6
P1080	P3-37 DO YOU TROUBLESHOOT MAGNETRONS?	.0	.6
P1081	P3-38 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRONS?	.0	.6
P1082	P3-39 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS?	.0	.0
P1083	P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF COLLECTOR PLATE COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.0
P1084	P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATCHER CAVITY COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.6
P1085	P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATCHER GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.6
P1086	P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FEEDBACK LOOP COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.6
P1087	P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF DRIFT SPACE COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.6
P1088	P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF BUNCHER GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.6
P1089	P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF BUNCHER CAVITY COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.6
P1090	P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CONTROL GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.6
P1091	P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.6
P1092	P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REPELLER (REFLECTOR) PLATE COMPONENTS OF REFLEX KLYSTRONS?	.0	.0
P1093	P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF GRID COMPONENTS OF REFLEX KLYSTRONS?	.0	.6
P1094	P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF GRID CAVITY GAP COMPONENTS OF REFLEX KLYSTRONS?	.0	.6
P1095	P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF RESONANT CAVITY COMPONENTS OF REFLEX KLYSTRONS?	.0	.6
P1096	P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MAGNETIC COUPLING LOOP COMPONENTS OF REFLEX KLYSTRONS?	.0	.6
P1097	P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FILAMENT COMPONENTS OF REFLEX KLYSTRONS?	.0	.6

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D TSK	TITLES	205 (M)	307 (M)	50 (M)	61
P1098	P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF REFLEX KLYSTRONS?	.0	.6		
P1099	P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF OUTPUT LEAD COMPONENTS OF REFLEX KLYSTRONS?	.0	.6		
P1100	P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FILAMENT COMPONENTS OF TRAVELING-WAVE TUBES?	.0	1.1		
P1101	P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF TRAVELING-WAVE TUBES?	.0	1.1		
P1102	P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MODULATOR GRID COMPONENTS OF TRAVELING-WAVE TUBES?	.0	1.1		
P1103	P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF ANODE COMPONENTS OF TRAVELING-WAVE TUBES?	.0	1.1		
P1104	P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF HELIX COMPONENTS OF TRAVELING-WAVE TUBES?	.0	1.1		
P1105	P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF COLLECTOR COMPONENTS OF TRAVELING-WAVE TUBES?	.0	1.1		
P1106	P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MAGNET COMPONENTS OF TRAVELING-WAVE TUBES?	.0	1.1		
P1107	P3-64 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF ATTENUATOR COMPONENTS OF TRAVELING-WAVE TUBES?	.0	.6		
P1108	P3-65 DO YOU PERFORM TASKS ON FERRITE CIRCULATOR COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.6		
P1109	P3-66 DO YOU PERFORM TASKS ON SIGNAL CAVITY COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.6		
P1110	P3-67 DO YOU PERFORM TASKS ON IDLER CAVITY COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.6		
P1111	P3-68 DO YOU PERFORM TASKS ON VARACTOR DIODE COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.6		
P1112	P3-69 DO YOU PERFORM TASKS ON FERRITE ISOLATOR COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.6		
P1113	P3-70 DO YOU PERFORM TASKS ON REVERSE-BIAS BATTERY COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.6		
P1114	P3-71 DO YOU PERFORM TASKS ON ANODE COMPONENTS OF MAGNETRONS?	.0	.0		
P1115	P3-72 DO YOU PERFORM TASKS ON ANODE COOLING PIN COMPONENTS OF MAGNETRONS?	.0	.0		
P1116	P3-73 DO YOU PERFORM TASKS ON COUPLING LOOP COMPONENTS OF MAGNETRONS?	.0	.0		
P1117	P3-74 DO YOU PERFORM TASKS ON HEATER LEAD COMPONENTS OF MAGNETRONS?	.0	.0		
P1118	P3-75 DO YOU PERFORM TASKS ON RESONANT CAVITY COMPONENTS OF MAGNETRONS?	.0	.0		
P1119	P3-76 DO YOU PERFORM TASKS ON CATHODE COMPONENTS OF MAGNETRONS?	.0	.0		
P1120	P3-77 DO YOU PERFORM TASKS ON MAGNET COMPONENTS OF MAGNETRONS?	.0	.0		

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D TSM TITLES

Q REGISTERS (Q1), STORAGE DEVICES (Q2), DIGITAL-TO-ANALOG AND
ANALOG-TO-DIGITAL CONVERTERS (Q3)

Q1121 Q1-1 DO YOU USE OR REFER TO STORAGE REGISTERS?	3.1	2.3
Q1122 Q1-2 DO YOU USE OR REFER TO SHIFT REGISTERS?	3.1	2.8
Q1123 Q1-3 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS?	2.1	1.1
Q1124 Q1-4 DO YOU USE OR REFER TO LOGIC SYMBOLS OR STORAGE REGISTERS?	2.1	1.1
Q1125 Q1-5 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTER CIRCUITS?	1.6	.0
Q1126 Q1-6 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPES OF REGISTER CIRCUITS?	1.0	.0
Q1127 Q1-7 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES HAVE PASSED?	1.0	.0
Q1128 Q2-1 DO YOU WORK WITH STORAGE DEVICES IN YOUR PRESENT JOB? IF NO, GO TO ITEM Q3-1; IF YES, CONTINUE.	42.4	10.7
Q1129 Q2-2 DO YOU USE OR REFER TO DELAY LINES?	.0	1.1
Q1130 Q2-3 DO YOU USE OR REFER TO MAGNETIC CORES OR BIMAGS?	2.6	3.4
Q1131 Q2-4 DO YOU USE OR REFER TO MAGNETIC DRUMS?	2.3	7.9
Q1132 Q2-5 DO YOU USE OR REFER TO MAGNETIC TAPES?	44.3	9.0
Q1133 Q2-6 DO YOU USE OR REFER TO ACCESS TIME OR SPEED OF MEMORY SYSTEMS?	13.0	6.2
Q1134 Q2-7 DO YOU USE OR REFER TO STORAGE CAPACITY OF MEMORY SYSTEMS?	23.4	7.3
Q1135 Q2-8 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS?	5.2	2.8
Q1136 Q2-9 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES?	.0	.6
Q1137 Q2-10 DO YOU USE OR REFER TO MAGNETIC DISKS?	37.0	7.3
Q1138 Q2-11 DO YOU USE OR REFER TO THIN FILMS?	4.2	1.7
Q1139 Q2-12 DO YOU USE OR REFER TO SEMICONDUCTOR MEMORY (INTEGRATED) CIRCUITS?	6.3	3.4
Q1140 Q2-13 DO YOU USE OR REFER TO BUBBLE MEMORIES?	.5	1.1
Q1141 Q2-14 DO YOU USE OR REFER TO PUNCH CARDS?	17.2	9.0
Q1142 Q2-15 DO YOU USE OR REFER TO PAPER TAPES?	19.3	9.0
Q1143 Q2-16 DO YOU USE OR REFER TO RANDOM ACCESS MEMORIES (RAM)?	20.3	6.8
Q1144 Q2-17 DO YOU USE OR REFER TO READ ONLY MEMORIES (ROM)?	12.8	4.5
Q1145 Q2-18 DO YOU USE OR REFER TO PROGRAMMABLE READ ONLY MEMORIES (PROM)?	10.4	3.4
Q1146 Q2-19 DO YOU USE OR REFER TO TRANSFORMER READ ONLY STORAGES (TROS)?	.5	2.3
Q1147 Q2-20 DO YOU USE OR REFER TO CAPACITY READ ONLY STORAGES (CROS)?	.5	1.7
Q1148 Q2-21 DO YOU INSPECT STORAGE DEVICES?	2.9	.6
Q1149 Q2-22 DO YOU CLEAN STORAGE DEVICES?	9.4	1.1
Q1150 Q2-23 DO YOU ALIGN STORAGE DEVICES?	1.6	.0
Q1151 Q2-24 DO YOU ADJUST STORAGE DEVICES?	2.1	.0
Q1152 Q2-25 DO YOU TROUBLESHOOT MEMORY SYSTEM STORAGE DEVICES?	1.0	.6
Q1153 Q2-26 DO YOU REMOVE OR REPLACE ASSEMBLIES OR COMPONENTS OF STORAGE DEVICES?	1.0	.0

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D TSM TITLES

Q1154 Q2-27 DO YOU TRACE SIGNAL FLOW IN STORAGE DEVICES USING LOGIC DIAGRAMS OR SCHEMATICS? 2.1 .6

Q1155 Q3-1 IN YOUR PRESENT JOB, DO YOU WORK WITH DIGITAL-TO-ANALOG (D/A) CONVERTERS OR ANALOG-TO-DIGITAL (A/D) CONVERTERS? 20.8 38.4
IF NO, GO TO ITEM R1-1; IF YES, CONTINUE.

Q1156 Q3-2 DO YOU COMPUTE OUTPUT VOLTAGES FOR ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS FOR GIVEN INPUT VOLTAGES? .5 2.0

Q1157 Q3-3 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE COUNT IN ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS IS DETERMINED BY ADDING THE DENOMINATORS OF THE RESISTORS? .5 2.3

Q1158 Q3-4 DO YOU COMPUTE ANALOG VOLTAGES FOR GIVEN BINARY COUNTS IN ELECTRONIC DIGITAL-TO-ANALOG (D/A) CONVERTERS? 1.6 .6

Q1159 Q3-5 DO YOU PERFORM TASKS ON SAMPLE FUNCTION PORTIONS OF ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS? 3.1 1.7

Q1160 Q3-6 DO YOU PERFORM TASKS ON HOLD FUNCTION PORTIONS OF ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS? 1.6 .0

Q1161 Q3-7 DO YOU PERFORM TASKS ON COMPARE FUNCTION PORTIONS OF ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS? 1.6 1.1

Q1162 Q3-8 DO YOU PERFORM TASKS ON DIGITIZE FUNCTION PORTIONS OF ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS? 5.7 1.7

Q1163 Q3-9 DO YOU PERFORM TASKS ON PORTIONS OF ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS BUT DON'T KNOW WHICH FUNCTION? 2.1 7.3

Q1164 Q3-10 DO YOU USE OR REFER TO SAMPLE FUNCTION OF A/D CONVERTERS? 3.6 1.7

Q1165 Q3-11 DO YOU USE OR REFER TO HOLD FUNCTION OF A/D CONVERTERS? 1.6 .0

Q1166 Q3-12 DO YOU USE OR REFER TO COMPARE FUNCTION OF A/D CONVERTERS? 2.1 1.7

Q1167 Q3-13 DO YOU USE OR REFER TO DIGITAL FUNCTION OF A/D CONVERTERS? 4.2 3.4

Q1168 Q3-14 DO YOU PERFORM ANY TASKS ON MECHANICAL ANALOG-TO-DIGITAL (A/D) CONVERTERS? 3.1 5.1

Q1169 Q3-15 DO YOU PERFORM ANY TASKS ON ELECTRONIC A/D CONVERTERS? 7.0 9.0

Q1170 Q3-16 DO YOU PERFORM ANY TASKS ON DIGITAL-TO-ANALOG (D/A) CONVERTERS? 3.6 11.9

Q1171 Q3-17 DO YOU OPERATE COMPUTER KEYBOARDS? 20.3 11.3

Q1172 Q3-18 DO YOU WORK AT OR WITH COMPUTER TERMINALS? 19.8 18.6

Q1173 Q3-19 HAVE YOU BEEN SENT TO FACTORY TRAINING OR TO ANY OTHER SCHOOL FOR THE SPECIFIC PURPOSE OF RECEIVING COMPUTER OR LOGIC CIRCUIT RELATED TRAINING? 2.6 1.7

Q1174 Q3-20 DO YOU HAVE MICROPROCESSORS OR COMPUTER EQUIPMENT LOCATED AT YOUR WORK STATION WHICH IS OPERATED OR MAINTAINED BY CONTRACTOR PERSONNEL? 17.2 12.4

Q1175 Q3-21 WAS THE COMPUTER OR LOGIC CIRCUIT TRAINING YOU RECEIVED IN YOUR 3-LEVEL AWARDING COURSE ADEQUATE IN TERMS OF YOUR PRESENT DUTIES? 2.6 10.2

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O TSK TITLES

Q1176 Q3-22 ARE YOU ASSIGNED AGAINST A POSITION WHICH REQUIRES A
"O" PREFIX?

.5 .6

R PHANTASTRONS (R1), SCHMITT TRIGGERS (R2), CABLE
FABRICATION (P3)

R1177 R1-1 DO YOU WORK WITH PHANTASTRON CIRCUITRY? IF NO, GO TO
ITEM R2-1. IF YES, CONTINUE.

1.0 .6

R1178 R1-2 PHANTASTRON CIRCUITRY HAS VARIABLE-DELAY APPLICATIONS
IN MY JOB.

.0 .0

R1179 R1-3 PHANTASTRON CIRCUITRY HAS SEARCH-LOCK AUTOMATIC
FREQUENCY CONTROLS (AFC) APPLICATIONS IN MY JOB.

.5 .6

R1180 R1-4 PHANTASTRON CIRCUITRY HAS MONOSTABLE MULTIVIBRATORS
APPLICATIONS IN MY JOB.

.0 .0

R1181 R1-5 PHANTASTRON CIRCUITRY HAS BISTABLE MULTIVIBRATORS
APPLICATIONS IN MY JOB.

.0 .0

R1182 R1-6 PHANTASTRON CIRCUITRY HAS FREE-RUNNING MULTIVIBRATORS
APPLICATIONS IN MY JOB.

.0 .0

R1183 R2-1 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER
CIRCUITS? IF NO, GO TO ITEM R3-1; IF YES, CONTINUE.

2.6 .6

R1184 R2-2 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER
SCHEMATIC DIAGRAMS?

.5 .0

R1185 R2-3 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS?
R1186 R3-1 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTOR
CABLES?

.5 .0

1.0 4.0

R1187 R3-2 DO YOU FABRICATE COAXIAL CABLES?

1.6 2.8

S INPUT/OUTPUT (PERIPHERAL) DEVICES (S1), PHOTO SENSITIVE
DEVICES (S2), SYNCHRONOUS VIBRATIONS (CHOPPER
CIRCUITS) (S3)

S1188 S1-1 DO YOU WORK WITH INPUT OR OUTPUT DEVICES ON YOUR
PRESENT JOB? IF NO, GO TO ITEM S2-1; IF YES, CONTINUE.

75.5 73.4

S1189 S1-2 DO YOU USE OR REFER TO KEYBOARDS OR TELETYPEWRITERS?

71.9 75.1

S1190 S1-3 DO YOU USE OR REFER TO PRINTERS?

65.6 66.7

S1191 S1-4 DO YOU USE OR REFER TO TAPE DRIVES (UNITS)?

55.2 24.9

S1192 S1-5 DO YOU USE OR REFER TO CARD READERS/CARD PUNCHES?

26.0 24.9

S1193 S1-6 DO YOU USE OR REFER TO VIDEO DISPLAYS (CRT'S)?

70.8 42.4

S1194 S1-7 DO YOU USE OR REFER TO NIXIE LIGHTS (TUBES)?

10.4 9.0

S1195 S1-8 DO YOU USE OR REFER TO LED'S?

28.6 41.2

S1196 S1-9 DO YOU USE OR REFER TO LCD'S?

17.2 13.6

S1197 S1-10 DO YOU USE OR REFER TO INCANDESCENT DISPLAYS?

10.4 12.4

S1198 S1-11 DO YOU USE OR REFER TO TOGGLE OR PUSH BUTTON SWITCH
INPUTS?

41.1 39.0

S1199 S1-12 DO YOU USE OR REFER TO INTERFACE ADAPTER UNITS?

16.1 22.0

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D TSM	TITLES	205 (M)	307 50 (M)
S1200	S1-13 DO YOU USE OR REFER TO TAPE READERS?	34.9	44.1
S1201	S1-14 DO YOU USE OR REFER TO TAPE PUNCHES?	27.6	45.8
S1202	S2-1 DO YOU WORK WITH PHOTODIODE PHOTO SENSITIVE DEVICES?	1.0	.6
S1203	S2-2 DO YOU WORK WITH PHOTOTRANSISTOR PHOTO SENSITIVE DEVICES?	.5	.6
S1204	S2-3 DO YOU WORK WITH PHOTOTUBE PHOTO SENSITIVE DEVICES?	1.0	.6
S1205	S2-4 DO YOU WORK WITH PHOTO-SCR PHOTO SENSITIVE DEVICES?	1.0	.6
S1206	S2-5 DO YOU WORK WITH PHOTOCCELL (PHOTOCONDUCTIVE OR PHOTOVOLTAIC) PHOTO SENSITIVE DEVICES?	1.0	2.3
S1207	S3-1 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS? IF NO, GO TO ITEM T1-12. IF YES, CONTINUE.	1.6	.0
S1208	S3-2 DO YOU USE OR REFER TO EXCITATION FREQUENCY CHOPPER COIL ITEMS?	.0	.0
S1209	S3-3 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIP CHOPPER COIL ITEMS?	.5	.0
S1210	S3-4 DO YOU MEASURE EXCITATION FREQUENCY CHOPPER COIL ITEMS?	.0	.0
S1211	S3-5 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIP CHOPPER COIL ITEMS?	.0	.0
S1212	S3-6 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.0	.0
S1213	S3-7 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.0	.0
S1214	S3-8 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.0	.0
S1215	S3-9 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.0	.0

T	INFRARED (T1), LASERS (T2), DISPLAY TUBES (T3), TELEVISION (T4)		

T1216	T1-1 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS? IF NO, GO TO ITEM T2-1; IF YES, CONTINUE.	1.0	.0
T1217	T1-2 DO YOU INSPECT INFRARED SYSTEMS?	.0	.0
T1218	T1-3 DO YOU CLEAN INFRARED SYSTEMS?	.0	.0
T1219	T1-4 DO YOU SERVICE INFRARED SYSTEMS?	.0	.0
T1220	T1-5 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS?	.0	.0
T1221	T1-6 DO YOU OPERATE INFRARED SYSTEMS?	.0	.0
T1222	T1-7 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS?	.0	.0
T1223	T1-8 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS?	.0	.0
T1224	T1-9 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS?	.0	.0
T1225	T1-10 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS?	.0	.0

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O TSK	TITLES	205 50 (M)	307 50 (M)
T1226	T1-11 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS?	.0	.0
T1227	T1-12 DO YOU USE OR REFER TO FAR REGIONS?	1.0	.0
T1228	T1-13 DO YOU USE OR REFER TO INTERMEDIATE REGIONS?	1.0	.0
T1229	T1-14 DO YOU USE OR REFER TO NEAR REGIONS?	1.0	.0
T1230	T1-15 DO YOU USE OR REFER TO MICRONS (M)?	.5	.0
T1231	T1-16 DO YOU USE OR REFER TO GRAY BODIES?	.5	.0
T1232	T1-17 DO YOU USE OR REFER TO BLACK BODIES?	.5	.0
T1233	T1-18 DO YOU USE OR REFER TO ABSORPTION?	.5	.6
T1234	T1-19 DO YOU USE OR REFER TO SCATTERING?	.5	.6
T1235	T1-20 DO YOU USE OR REFER TO ABSOLUTE ZERO?	.0	.0
T1236	T1-21 DO YOU PERFORM TASKS ON BLITZ?	.0	.0
T1237	T1-22 DO YOU PERFORM TASKS ON TARGET BUTTONS?	.0	.0
T1238	T1-23 DO YOU PERFORM TASKS ON ERECTOR LENSES?	.0	.0
T1239	T1-24 DO YOU PERFORM TASKS ON OCULAR LENSES?	.0	.0
T1240	T1-25 DO YOU PERFORM TASKS ON CORRECTION LENSES?	.0	.0
T1241	T1-26 DO YOU PERFORM TASKS ON FILTERS?	.0	.0
T1242	T1-27 DO YOU PERFORM TASKS ON SPHERICAL MIRRORS?	.0	.0
T1243	T1-28 DO YOU PERFORM TASKS ON PLANE MIRRORS?	.0	.0
T1244	T2-1 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS? IF NO, GO TO ITEM T3-1; IF YES, CONTINUE.	1.0	.6
T1245	T2-2 DO YOU INSPECT LASER SYSTEMS?	.0	.0
T1246	T2-3 DO YOU CLEAN LASER SYSTEMS?	.0	.0
T1247	T2-4 DO YOU SERVICE LASER SYSTEMS?	.0	.0
T1248	T2-5 DO YOU OPERATE LASER SYSTEMS?	.0	.0
T1249	T2-6 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS?	.0	.0
T1250	T2-7 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS?	.0	.6
T1251	T2-8 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS?	.0	.0
T1252	T2-9 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS?	.0	.0
T1253	T2-10 DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS?	.0	.0
T1254	T2-11 DO YOU USE OR REFER TO ANGSTROMS (A)?	.5	.0
T1255	T2-12 DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS?	.0	.0
T1256	T2-13 DO YOU USE OR REFER TO GROUND STATE?	.5	.0
T1257	T2-14 DO YOU USE OR REFER TO EXCITED STATE?	.5	.0
T1258	T2-15 DO YOU USE OR REFER TO PACKET OF RADIATION?	.0	.0
T1259	T2-16 DO YOU USE OR REFER TO PHOTONS?	.5	.0
T1260	T2-17 DO YOU USE OR REFER TO SPONTANEOUS EMISSIONS?	.5	.0
T1261	T2-18 DO YOU USE OR REFER TO STIMULATED EMISSIONS?	.5	.0
T1262	T2-19 DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE?	.5	.0
T1263	T2-20 DO YOU USE OR REFER TO INVERSION LEVELS?	.0	.0
T1264	T2-21 DO YOU USE OR REFER TO MONOCHROMATIC?	.5	.0
T1265	T2-22 DO YOU WORK WITH ACTIVE MATERIALS?	.0	.0
T1266	T2-23 DO YOU WORK WITH PUMPING SOURCES?	.0	.0
T1267	T2-24 DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS?	.0	.0

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSM	TITLES	205 (M)	307 (M)
T1268	T2-25 DO YOU WORK WITH HALF SILVERED 192R REFLECTIVE MIRRORS?	.0	.0
T1269	T2-26 DO YOU WORK WITH HELICAL FLASHTUBES?	.0	.0
T1270	T2-27 DO YOU WORK WITH RUBY MATERIALS?	.0	.0
T1271	T2-28 DO YOU WORK WITH HELIUM-NEON MATERIALS?	.0	.0
T1272	T2-29 DO YOU WORK WITH HELIUM-XENON MATERIALS?	.0	.0
T1273	T2-30 DO YOU WORK WITH XENON MATERIALS?	.0	.0
T1274	T2-31 DO YOU WORK WITH CESIUM-HELIUM MATERIALS?	.0	.0
T1275	T2-32 DO YOU WORK WITH ARGON MATERIALS?	.0	.0
T1276	T2-33 DO YOU WORK WITH NEODYMIUM IN GLASS MATERIALS?	.0	.0
T1277	T2-34 DO YOU WORK WITH GALLIUM ARSENIDE MATERIALS?	.0	.0
T1278	T3-1 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE TUBES (DVST), MULTIPLE MODE STORAGE TUBES (MMST), OR SCAN CONVERTER TUBES (SCT)? IF NO, GO TO ITEM T4-12. IF YES, CONTINUE.	.5	1.1
T1279	T3-2 DO YOU INSPECT DVST OR MMST?	.0	.0
T1280	T3-3 DO YOU CLEAN DVST OR MMST?	.0	.0
T1281	T3-4 DO YOU ADJUST OR CALIBRATE DVST OR MMST?	.0	.0
T1282	T3-5 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST?	.0	.0
T1283	T3-6 DO YOU TROUBLESHOOT DVST OR MMST CIRCUITS?	.0	.0
T1284	T3-7 DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM MAJOR ASSEMBLIES OR UNITS?	.0	.0
T1285	T3-8 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF DVST?	.0	.0
T1286	T3-9 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF MMST?	.0	.0
T1287	T3-10 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF SCT?	.0	.0
T1288	T3-11 DO YOU PERFORM TASKS ON FLOOD GUNS?	.0	.0
T1289	T3-12 DO YOU PERFORM TASKS ON WRITE GUNS?	.0	.0
T1290	T3-13 DO YOU PERFORM TASKS ON READ GUNS?	.0	.0
T1291	T3-14 DO YOU PERFORM TASKS ON ATTACK GUNS?	.0	.0
T1292	T3-15 DO YOU PERFORM TASKS ON ERASE GUNS?	.0	.0
T1293	T3-16 DO YOU PERFORM TASKS ON STORAGE GRIDS?	.0	.0
T1294	T4-1 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS DEALING WITH TELEVISION SYSTEMS INCLUDING LOW LIGHT TELEVISION? IF NO, GO TO ITEM T4-12. IF YES, CONTINUE.	3.6	2.8
T1295	T4-2 DO YOU INSPECT TELEVISION SYSTEMS?	.5	.0
T1296	T4-3 DO YOU CLEAN TELEVISION SYSTEMS?	.5	.6
T1297	T4-4 DO YOU ADJUST OR CALIBRATE TELEVISION SYSTEMS?	.5	1.1
T1298	T4-5 DO YOU OPERATE TELEVISION SYSTEMS?	3.1	2.8
T1299	T4-6 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF TV SYSTEMS?	.5	.6
T1300	T4-7 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF TV SYSTEMS?	.5	.0
T1301	T4-8 DO YOU TROUBLESHOOT DOWN TO TV SYSTEM COMPONENT PARTS?	.0	.0
T1302	T4-9 DO YOU REMOVE OR REPLACE TV SYSTEM MAJOR ASSEMBLIES?	.0	.0
T1303	T4-10 DO YOU REMOVE OR REPLACE TV SYSTEM COMPONENT PARTS?	.0	.0

205 307
50 50
(M) (P)

O TSM TITLES

U COMPUTERS, MICROPROCESSORS, AND PROGRAMMING (U1), DB AND POWER RATIOS (U2)

U1304 U1-1 IN YOUR PRESENT JOB, DO YOU PERFORM MAINTENANCE ROUTINES OR PROGRAMMING TASKS? IF NO, GO TO ITEM U2-1; IF YES, CONTINUE.

U1305 U1-2 DO YOU USE OR REFER TO DECIMAL SYSTEMS?
U1306 U1-3 DO YOU USE OR REFER TO OCTAL SYSTEMS?
U1307 U1-4 DO YOU USE OR REFER TO PARITY DETECTORS/GENERATORS?
U1308 U1-5 DO YOU USE OR REFER TO HEXADECIMAL SYSTEMS?
U1309 U1-6 DO YOU USE OR REFER TO 8-4-2-1 SYSTEMS?
U1310 U1-7 DO YOU USE OR REFER TO FOUR SYSTEMS?
U1311 U1-8 DO YOU USE OR REFER TO BINARY SYSTEMS?
U1312 U1-9 DO YOU USE OR REFER TO TIME-SHARING (MULTI-SEQUENCING)?

U1313 U1-10 DO YOU USE OR REFER TO DATA WORDS?
U1314 U1-11 DO YOU USE OR REFER TO ADDRESS WORDS?
U1315 U1-12 DO YOU USE OR REFER TO ADDRESS/SUBADDRESS?
U1316 U1-13 DO YOU USE OR REFER TO STEERING/INFORMATION?
U1317 U1-14 DO YOU USE OR REFER TO INSTRUCTION WORDS?
U1318 U1-15 DO YOU USE OR REFER TO DAP-16?
U1319 U1-16 DO YOU USE OR REFER TO BINARY CODED DECIMAL (BCD)?
U1320 U1-17 DO YOU USE OR REFER TO CONTROL WORDS?
U1321 U1-18 DO YOU USE OR REFER TO RESPONSE WORDS?
U1322 U1-19 DO YOU USE OR REFER TO WRAPAROUND WORDS?
U1323 U1-20 DO YOU USE OR REFER TO TEST OR DIAGNOSTIC PROGRAMS?
U1324 U1-21 DO YOU USE OR REFER TO RELIABILITY PROGRAMS?
U1325 U1-22 DO YOU USE OR REFER TO COMPILERS?
U1326 U1-23 DO YOU USE OR REFER TO ASSEMBLERS?
U1327 U1-24 DO YOU USE OR REFER TO MACHINE LANGUAGE?
U1328 U1-25 DO YOU USE OR REFER TO MNEMONICS?
U1329 U1-26 DO YOU USE OR REFER TO ROUTINES OR SUBROUTINES?
U1330 U1-27 DO YOU USE OR REFER TO FLOW CHARTS OR DIAGRAMS?
U1331 U1-28 DO YOU USE OR REFER TO 'ATLAS'?
U1332 U1-29 DO YOU USE OR REFER TO 'ELAN'?
U1333 U1-30 DO YOU PERFORM TASKS ON SINGLE LEVEL PROGRAMMING SYSTEMS?

U1334 U1-31 DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING SYSTEMS?

U1335 U1-32 DO YOU WRITE PROGRAMS FOR TROUBLESHOOTING OF SPECIFIC CIRCUITS?

U1336 U1-33 DO YOU USE PROGRAMS FOR TROUBLESHOOTING OF SPECIFIC CIRCUITS?

U1337 U1-34 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER CONTROL SECTIONS?

U1338 U1-35 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER INPUT SECTIONS?

U1339 U1-36 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER OUTPUT SECTIONS?

12.5 2.3

6.8 1.1
5.2 1.1
3.6 1.7
4.7 .6
1.6 .0
1.0 .0
6.3 2.3
6.8 1.1

6.8 2.3
6.8 2.3
6.8 1.1
2.1 .0
5.2 2.3
.5 .6

3.6 .6
6.3 1.1
5.2 1.1
1.6 .0
3.6 1.1
2.6 .0
3.1 .0
3.6 .0
4.2 1.1
4.2 1.1
6.3 1.1
6.8 1.1
1.6 .0
.5 .0
2.6 .6

2.1 .6

.5 .6

1.6 .6

3.1 .6

5.7 1.1

4.7 1.1

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 50 (M)	307 50 (M)
U1340	U1-37 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER MONITOR SECTIONS?	3.1	1.7
U1341	U1-38 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER TRANSMIT SECTIONS?	3.1	.6
U1342	U1-39 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER RECEIVE SECTIONS?	2.1	1.1
U1343	U1-40 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER INPUT DEVICES?	8.9	1.7
U1344	U1-41 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER STORAGE DEVICES?	7.3	1.7
U1345	U1-42 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER OUTPUT DEVICES?	7.8	1.7
U1346	U1-43 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER POWER DEVICES?	4.2	.6
U1347	U1-44 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER MONITOR DEVICES?	6.3	2.3
U1348	U1-45 DO YOU USE FORTRAN PROGRAMMING LANGUAGE?	5.2	.6
U1349	U1-46 DO YOU USE COBOL PROGRAMMING LANGUAGE?	1.6	.0
U1350	U1-47 DO YOU USE RPG PROGRAMMING LANGUAGE?	1.0	.0
U1351	U1-48 DO YOU USE OR PERFORM TASKS ON MICROPROCESSOR BASED EQUIPMENT?	2.6	1.1
U1352	U1-49 DO YOU USE INPUT PORT LATCH CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	.0	.6
U1353	U1-50 DO YOU USE OUTPUT PORT LATCH CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	.0	.6
U1354	U1-51 DO YOU USE RAM MEMORY CIRCUITS (STATIC OR DYNAMIC) IN CONJUNCTION WITH THE MICROPROCESSOR?	2.1	.6
U1355	U1-52 DO YOU USE ROM MEMORY CIRCUITS (INCLUDES PROM, EPROM, ETC.) IN CONJUNCTION WITH THE MICROPROCESSOR?	2.6	.6
U1356	U1-53 DO YOU USE TRI-STATE CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	.0	.0
U1357	U1-54 DO YOU USE CLOCK GENERATOR CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	1.6	.6
U1358	U1-55 DO YOU USE STATUS LATCH CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	.0	.6
U1359	U1-56 DO YOU USE BIDIRECTIONAL BUFFER CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	1.0	.0
U1360	U1-57 DO YOU USE ENCODER/DECODER CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	2.1	.6
U1361	U2-1 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION?	29.7	88.1
U1362	U2-2 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS?	8.3	40.7
U1363	U2-3 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS?	8.3	37.9
U1364	U2-4 DO YOU USE VTVM (DB METERS) TO CHECK FOR NOISE OR SIGNAL LEVEL?	5.2	85.3
U1365	U2-5 DO YOU USE VTVM (DB METERS) TO CHECK OR ADJUST AUDIO AMPLIFIERS?	2.6	68.9

KEESLER ELECTRONIC PPINCIPLES INVENTORY DATA

205 307
50 50
(M) (P)

D TSM TITLES

U1366 U2-6 DO YOU USE A HP3550 OR 344A TEST SET TO ALIGN AUDIO EQUIPMENT?

.5 36.7

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPID3 PAGE 1

KEESLER EPI CAREER LADDERS, ELECTRONIC PRINCIPLES INVENTORY (EPI) DATA ARE PRESENTED BELOW EACH DUTY TITLE. DATA FOR THIS PRINTOUT WERE COLLECTED FROM CAREER LADDER INCUMBENTS DURING THE PERIOD DECEMBER 1982 THROUGH JULY 1983.

USE OF EPI PRINTOUT: THE PERCENT OF VARIOUS CAREER LADDER GROUPS RESPONDING TO EPI QUESTIONS IS LISTED TO THE RIGHT OF EACH EPI ITEM. THUS, THE APPROPRIATE SAMPLE CRITERION GROUPS CAN BE IDENTIFIED WITH THE COLUMN HEADINGS AT THE TOP RIGHT OF EACH PRINTOUT PAGE. THEN THE PERCENT OF THAT GROUP USING THE CONCEPT OR PIECE OF EQUIPMENT CAN BE IDENTIFIED.

USE OF EPI DATA: THESE DATA MAY BE USED IN HELPING TO IDENTIFY, DELINEATE, AND VALIDATE ELECTRONIC PRINCIPLES ITEMS IN THE STS. CRITERIA LISTED IN ATCH 52-22 FOR ABR TRAINING MAY BE USEFUL IN HELPING DEVELOP ENTRY-LEVEL ELECTRONIC PRINCIPLE COURSES. ALSO, CDC WRITERS MAY USE EPI DATA TO HELP DETERMINE AREAS TO EMPHASIZE IN 5- AND 7-SKILL LEVEL CDS, CONSISTENT WITH STS CODES.

FOR ASSISTANCE IN USING PRINTOUTS PHONE USAFOMC/DOMO, AUTOVON 487-5811.

VECTOR TYPE CODES:

- (T) = 3 TIME SPENT BY ALL MEMBERS
- (M) = 3 MEMBERS PERFORMING
- (F) = TASK FACTOR
- (D) = DICHOTOMOUS SET
- (B) = 3 TIME SPENT BY MEMBERS PERFORMING
- (-) = PROGRAM GENERATED VECTOR

NO	TYPE	VECTOR	/MEMBERS/		DESCRIPTION	FACTOR #
			MEAN	SD		
1	M	304 70	123		DAFSC 30470 AIRMEN	32
2	M	304 71	122		DAFSC 30471 AIRMEN	34
3	M	304 74	126		DAFSC 30474 AIRMEN	36
4	M	305 74	136		DAFSC 30574 AIRMEN	38
5	M	328 70	143		DAFSC 32870 AIRMEN	42
6	M	328 71	142		DAFSC 32871 AIRMEN	44
7	M	328 72	43		DAFSC 32872 AIRMEN	46
8	M	328 73	142		DAFSC 32873 AIRMEN	48
9	M	328 74	164		DAFSC 32874 AIRMEN	50
10	M	328 75	87		DAFSC 32875 AIRMEN	52

KEESLER EPI CAREER LADDERS, ELECTRONIC PRINCIPLES INVENTORY (EPI) DATA ARE PRESENTED BELOW EACH DUTY TITLE. DATA FOR THIS PRINTOUT WERE COLLECTED FROM CAREER LADDER INCUMBENTS DURING THE PERIOD DECEMBER 1982 THROUGH JULY 1983.

USE OF EPI PRINTOUT: THE PERCENT OF VARIOUS CAREER LADDER GROUPS RESPONDING TO EPI QUESTIONS IS LISTED TO THE RIGHT OF EACH EPI ITEM. THUS, THE APPROPRIATE SAMPLE CRITERION GROUPS CAN BE IDENTIFIED WITH THE COLUMN HEADINGS AT THE TOP RIGHT OF EACH PRINTOUT PAGE. THEN THE PERCENT OF THAT GROUP USING THE CONCEPT OR PIECE OF EQUIPMENT CAN BE IDENTIFIED.

USE OF EPI DATA: THESE DATA MAY BE USED IN HELPING TO IDENTIFY, DELINEATE, AND VALIDATE ELECTRONIC PRINCIPLES ITEMS IN THE STS. CRITERIA LISTED IN ATRC 52-22 FOR ABR TRAINING MAY BE USEFUL IN HELPING DEVELOP ENTRY-LEVEL ELECTRONIC PRINCIPLE COURSES. ALSO, CDC WRITERS MAY USE EPI DATA TO HELP DETERMINE AREAS TO EMPHASIZE IN 5- AND 7-SKILL LEVEL CDS, CONSISTENT WITH STS CODES.

FOR ASSISTANCE IN USING PRINTOUTS PHONE USAFOMC/OMYO, AUTOVON 487-5811.

D TSK TITLES

A MATHEMATICS (A1), DIRECT CURRENT (A2), RESISTANCE AND RESISTIVE CIRCUITS (A3)

A 1 A1-1 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METERS OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10?
65.9 71.3 61.9 60.3 71.3 76.8 60.5 71.1 70.7 71.3

A 2 A1-2 DO YOU USE PUBLICATIONS, SUCH AS TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY FOR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB?
56.9 60.7 53.2 38.2 47.6 58.5 55.8 53.5 41.5 54.0

A 3 A1-3 DO YOU REARRANGE AND SOLVE FORMULAS OR EQUATIONS?
56.9 71.3 48.4 37.5 42.0 47.9 62.8 40.8 34.1 46.0

A 4 A1-4 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY?
33.3 36.9 27.0 11.0 18.2 12.0 25.6 13.4 15.9 23.0

A 5 A1-5 DO YOU SOLVE FOR UNKNOWN QUANTITIES SUCH AS SOLVING FOR X IN THE EQUATION $x + 6 = 8$?
39.8 50.8 38.9 27.2 28.7 38.7 46.5 27.5 26.2 34.5

A 6 A1-6 DO YOU USE LOGARITHM TABLES?
35.0 26.2 25.4 10.3 8.4 17.6 32.6 14.8 11.6 19.5

A 7 A1-7 DO YOU SOLVE QUADRATIC EQUATIONS SUCH AS SOLVING FOR X IN THE EQUATION $x^2 + 4x + 4 = 0$?
14.6 17.2 15.9 6.6 4.9 9.2 11.6 9.9 6.7 11.5

A 8 A1-8 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES?
17.2 41.0 16.7 7.4 7.0 15.5 18.6 13.4 36.0 8.0

A 9 A1-9 DO YOU USE TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT?
22.0 42.6 22.2 7.4 10.5 21.8 48.8 16.9 47.6 16.1

A 10 A1-10 DO YOU SOLVE OR USE PROPORTIONS? AN EXAMPLE OF A PROPORTION IS $2 : 5 :: 4 : 10$. ANOTHER WAY TO EXPRESS THE SAME RELATIONSHIP IS $2/5 = 4/10$. SOMETIMES, ONE OF THE QUANTITIES IS UNKNOWN AND HAS TO BE SOLVED FOR, SUCH AS $2 : x :: 4 : 10$ (X IN THIS CASE IS UNKNOWN).
44.7 54.9 41.3 22.1 30.8 31.7 23.3 23.2 24.4 35.6

A 11 A1-11 DO YOU USE MATHEMATICAL EXPONENTS OR SUBSCRIPTS IN OTHER THAN POWERS OF 10?
27.6 32.0 34.1 48.5 25.2 32.4 76.7 38.7 34.1 33.3

A 12 A2-1 DO YOU USE (PERHAPS IN TECHNICAL ORDERS) THE TERM VOLTAGE OR VOLT (V)?
92.7 92.6 95.2 92.6 97.2 96.5 93.0 95.8 98.2 95.4

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES												
		304 (M)	304 (P)	304 (M)	305 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)
A 29	A3-5 DO YOU MEASURE RESISTORS?	67.5	68.0	66.7	56.6	76.9	73.9	39.5	66.2	66.5	77.0	328	328
A 30	A3-6 DO YOU USE OR REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASK YOU PERFORM?	29.3	32.0	34.9	13.2	28.0	26.8	11.6	25.4	25.0	18.4	75	75
A 31	A3-7 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY CARBON?	49.6	57.4	54.2	42.6	60.8	53.5	23.3	44.4	43.9	51.7	328	328
A 32	A3-8 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY FIXED WIRE?	53.7	60.7	54.0	44.1	63.6	60.6	16.3	53.5	44.5	59.8	74	74
A 33	A3-9 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY SLIDE TAP?	43.9	57.4	48.4	37.5	49.7	44.4	14.0	38.0	27.4	65.5	73	73
A 34	A3-10 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY RHEOSTAT?	61.0	65.6	58.7	50.0	72.0	68.3	27.9	62.7	52.4	74.7	74	74
A 35	A3-11 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY POTENTIOMETER?	68.3	72.1	66.7	59.6	76.2	74.6	41.9	71.1	67.1	78.2	74	74
A 36	A3-12 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY FIXED FILM?	40.7	41.0	44.4	24.3	30.1	30.3	9.3	35.9	20.1	28.7	74	74
A 37	A3-13 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE?	69.9	73.0	70.6	60.3	77.6	76.8	27.9	67.6	64.0	72.4	74	74
A 38	A3-14 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE?	69.1	72.1	65.1	52.9	76.2	73.9	25.6	60.6	59.8	66.7	74	74
A 39	A3-15 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE?	14.6	16.4	18.3	17.6	24.5	18.3	9.3	12.0	11.0	26.4	74	74
A 40	A3-16 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES?	74.8	72.1	68.3	63.2	76.2	79.6	67.4	74.6	73.8	80.5	74	74
A 41	A3-17 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	60.2	69.7	57.1	39.0	60.1	53.5	23.3	52.1	46.3	51.7	74	74
A 42	A3-18 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	57.7	63.9	54.0	36.0	53.1	50.0	25.6	50.0	39.0	48.3	74	74
A 43	A3-19 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	56.9	64.8	55.6	42.6	53.8	54.2	20.9	50.7	46.3	52.9	74	74

O TASK	TITLES												
		304 (M)	304 71 (M)	304 74 (M)	305 74 (M)	320 70 (M)	320 71 (M)	320 72 (M)	320 73 (M)	320 74 (M)	320 75 (M)		
A 44	A3-20 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	55.3	56.6	50.0	30.1	45.5	40.8	18.6	45.1	27.4	42.5		
A 45	A3-21 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	56.1	68.9	56.3	39.7	56.6	55.6	18.6	52.8	46.3	49.4		
A 46	A3-22 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	53.7	62.3	52.4	37.5	51.7	50.0	16.3	52.1	40.2	46.0		
A 47	A3-23 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	56.1	63.1	55.6	41.9	51.0	51.4	11.6	50.0	45.1	47.1		
A 48	A3-24 DO YOU USE OR REFER TO INDIVIDUAL BRANCH CURRENT PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	48.8	59.0	47.6	33.1	44.8	45.1	11.6	43.0	32.9	41.4		
A 49	A3-25 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	51.2	54.1	49.2	29.4	43.4	38.0	14.0	42.3	28.0	37.9		
A 50	A3-26 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	56.1	66.4	55.6	37.5	56.6	53.5	14.0	51.4	45.1	49.4		
A 51	A3-27 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	52.8	62.3	51.6	33.8	49.7	47.9	16.3	49.3	39.0	46.0		
A 52	A3-28 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	52.8	63.1	53.2	37.5	48.3	47.9	9.3	47.9	43.3	48.3		
A 53	A3-29 DO YOU USE OR REFER TO INDIVIDUAL BRANCH CURRENT PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	45.5	59.0	45.2	27.9	42.0	40.8	9.3	41.5	28.7	44.8		
A 54	A3-30 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	48.8	54.1	46.8	26.5	42.0	35.9	11.6	40.1	26.8	39.1		
A 55	A3-31 DO YOU CALCULATE TOTAL RESISTANCE PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	52.0	62.3	50.0	33.8	43.4	45.1	11.6	45.8	37.8	44.8		
A 56	A3-32 DO YOU CALCULATE TOTAL CURRENT PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	48.0	56.6	45.2	30.1	38.5	41.5	11.6	43.0	32.3	42.5		
A 57	A3-33 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	47.2	58.2	50.0	33.8	40.6	43.0	7.0	42.3	35.4	42.5		

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D TSM TITLES

A 58 A3-34 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENT PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?

A 59 A3-35 DO YOU CALCULATE POWER DISSIPATION PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?

B METERS/MULTIMETERS (B1), ALTERNATING CURRENT (AC) (B2), INDUCTORS AND INDUCTIVE REACTANCE (B3)

B 60 B1-1 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE RESISTANCE?

B 61 B1-2 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE VOLTAGE?

B 62 B1-3 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE CURRENT?

B 63 B1-4 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE POWER?

B 64 B1-5 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE FREQUENCY?

B 65 B1-6 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE TEMPERATURE?

B 66 B1-7 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE PRESSURE?

B 67 B1-8 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE LIGHT LEVELS?

B 68 B2-1 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM EFFECTIVE VOLTAGE (RMS) IN YOUR PRESENT JOB?

204	304	304	305	328	328	328	328	328	328	328	328	328
70	71	74	74	70	71	72	73	74	75			
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)

43.1	54.1	43.7	26.5	34.3	38.0	7.0	36.6	25.6	41.4
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43.9	50.0	43.7	21.3	32.9	33.1	9.3	32.4	22.0	35.6
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74.0	73.0	69.8	66.9	88.8	88.7	72.1	76.1	87.8	80.5
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78.0	75.4	74.6	71.3	89.5	89.4	65.1	78.2	87.8	83.9
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66.7	66.4	65.9	56.6	65.0	81.7	34.9	65.5	57.9	64.4
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71.5	74.6	62.7	33.1	84.6	83.8	44.2	70.4	37.2	80.5
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71.5	74.6	71.4	55.1	74.8	79.6	44.2	70.4	65.9	83.9
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20.3	32.0	14.3	31.6	10.5	10.6	27.9	43.0	11.6	48.3
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25.2	13.1	15.9	20.6	36.4	52.8	34.9	31.7	24.4	57.5
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4.9	4.1	4.0	5.9	3.5	5.6	.0	4.9	4.9	5.7
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78.9	74.6	77.8	50.0	80.4	76.8	44.2	67.6	68.9	88.5
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Q	TSM	TITLES	304 70 (M)	304 71 (P)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
B	69	B2-2 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM PEAK TO PEAK VOLTAGE IN YOUR PRESENT JOB?	79.7	82.8	83.3	71.3	76.2	83.1	46.5	75.4	70.1	87.4
B	70	B2-3 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM AVERAGE VOLTAGE (DC) IN YOUR PRESENT JOB?	70.7	75.4	73.0	54.4	73.4	80.3	51.2	66.2	62.8	79.3
B	71	B2-4 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM WAVE LENGTH IN YOUR PRESENT JOB?	65.0	72.1	57.1	35.3	55.2	49.3	46.5	56.3	37.8	59.8
B	72	B2-5 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM FREQUENCY IN YOUR PRESENT JOB?	87.8	83.6	89.7	73.5	86.0	87.3	79.1	89.4	80.5	90.8
B	73	B2-6 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM INSTANTANEOUS VALUE IN YOUR PRESENT JOB?	39.8	36.9	27.8	16.9	22.4	27.5	9.3	28.2	15.9	36.8
B	74	B2-7 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM PHASE RELATIONSHIPS IN YOUR PRESENT JOB?	61.0	74.6	61.9	58.1	62.9	78.2	62.8	71.1	61.6	70.1
B	75	B3-1 DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKE COILS IN YOUR PRESENT JOB? IF NO, GO TO ITEM C1-1; IF YES, CONTINUE.	56.9	60.7	61.1	31.6	57.3	59.2	16.3	44.4	33.5	69.0
B	76	B3-2 DO YOU INSPECT INDUCTORS?	53.7	64.8	61.9	30.9	65.7	69.0	16.3	45.8	39.0	67.8
B	77	B3-3 DO YOU CLEAN INDUCTORS?	43.1	52.5	51.6	23.5	51.0	42.3	2.3	31.0	29.0	43.7
B	78	B3-4 DO YOU ADJUST INDUCTORS?	56.1	63.1	56.3	20.6	60.8	60.6	11.6	33.1	29.3	59.8
B	79	B3-5 DO YOU MEASURE INDUCTORS?	33.3	41.0	46.8	16.9	41.3	40.1	9.7	31.0	22.6	41.9
B	80	B3-6 DO YOU USE OR REFER TO INDUCTANCE?	56.1	64.8	62.7	28.7	58.0	59.2	14.0	43.7	30.5	63.2
B	81	B3-7 DO YOU USE OR REFER TO HENRIES?	43.1	48.4	50.0	22.1	44.8	40.8	9.3	33.8	21.3	43.7
B	82	B3-8 DO YOU USE OR REFER TO INDUCTIVE REACTANCE?	49.6	52.5	49.2	18.4	45.5	40.1	11.6	26.8	23.2	49.4
B	83	B3-9 DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS?	10.6	9.0	11.9	2.9	9.8	9.9	4.7	14.8	5.5	10.3
B	84	B3-10 DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS?	12.2	9.0	19.0	8.1	14.7	12.0	7.0	16.9	7.9	11.5
B	85	B3-11 DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS?	12.2	9.8	17.5	7.4	11.9	14.8	2.3	13.4	5.5	14.9
B	86	B3-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL?	15.4	12.3	19.8	8.1	11.2	9.2	4.7	7.0	6.1	12.6

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D TSK	TITLES															
	304	304	304	305	328	328	328	328	328	328	328	328	328	328	328	328
B 87 B3-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE COIL?	70 (M)	71 (M)	74 (M)	74 (M)	70 (M)	71 (M)	72 (M)	73 (M)	74 (M)	75 (M)	76 (M)	77 (M)	78 (M)	79 (M)	80 (M)	81 (M)
B 88 B3-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH?	12.2	11.5	17.5	6.6	9.8	6.3	4.7	4.2	4.2	3.7	11.5					
B 89 B3-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL?	10.6	9.8	18.3	8.1	11.9	6.3	4.7	4.2	4.2	4.9	12.6					
B 90 B3-16 DO YOU CALCULATE INDUCTANCE IN ELECTRICAL/ELECTRONIC CIRCUITS?	15.4	9.8	19.8	7.4	12.6	7.7	4.7	4.2	4.2	4.3	11.5					
B 91 B3-17 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS?	16.3	18.0	19.0	7.4	9.1	12.7	2.3	9.2	9.2	3.7	17.2					
B 92 B3-18 DO YOU CALCULATE INDUCTIVE REACTANCE?	34.1	30.3	34.1	18.4	35.7	35.9	11.6	21.1	17.7	33.3						
B 93 B3-19 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY?	22.8	23.0	26.2	9.6	11.9	16.2	7.0	11.3	5.5	18.4						
B 94 B3-20 DO YOU WORK WITH POWER INDUCTORS?	32.2	33.6	37.3	14.7	27.3	26.1	11.6	17.6	10.4	29.9						
B 95 B3-21 DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS?	36.6	36.1	37.3	25.0	35.7	40.8	7.0	27.5	15.2	56.3						
B 96 B3-22 DO YOU WORK WITH RADIO FREQUENCY INDUCTORS?	52.0	48.4	57.9	14.0	60.8	59.9	2.3	31.7	24.4	66.7						
	56.1	62.3	60.3	5.1	63.6	65.5	14.0	39.4	24.4	67.8						

C CAPACITORS AND CAPACITIVE REACTANCE (C1), TRANSFORMERS (C2), MAGNETISM (C3)

C 97 C1-1 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM C2-1: IF YES, CONTINUE.	64.2	69.7	68.3	55.1	69.2	73.9	32.6	68.3	56.7	75.9
C 98 C1-2 DO YOU INSPECT CAPACITORS?	61.8	67.2	66.7	55.9	67.1	75.4	25.6	59.2	54.3	75.9
C 99 C1-3 DO YOU CLEAN CAPACITORS?	47.2	54.9	57.1	37.5	52.4	48.6	7.0	35.9	14.8	42.5

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D TSM TITLES

C 119 C1-23 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LEADS VOLTAGE IN AC CAPACITOR CIRCUITS?

C 120 C1-24 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO FREQUENCY?

C 121 C1-25 DO YOU CALCULATE CAPACITIVE REACTANCE?

C 122 C1-26 DO YOU WORK WITH VARIABLE CAPACITORS?

C 123 C1-27 DO YOU WORK WITH TRIMMER CAPACITORS?

C 124 C1-28 DO YOU WORK WITH ELECTROLYTIC (FIXED) CAPACITORS?

C 125 C1-29 DO YOU WORK WITH OTHER FIXED CAPACITORS?

C 126 C2-1 DO YOU WORK WITH TRANSFORMERS IN YOUR PRESENT JOB?

IF NO, GO TO ITEM C3-1; IF YES, CONTINUE.

C 127 C2-2 DO YOU INSPECT TRANSFORMERS?

C 128 C2-3 DO YOU CLEAN TRANSFORMERS?

C 129 C2-4 DO YOU ADJUST TRANSFORMERS?

C 130 C2-5 DO YOU TROUBLESHOOT TRANSFORMERS?

C 131 C2-6 DO YOU MAKE A DISTINCTION BETWEEN MUTUAL INDUCTANCE AND MUTUAL INDUCTANCE (M)?

C 132 C2-7 DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE, M?

C 133 C2-8 DO YOU REFER TO OR USE THE COEFFICIENT OF COUPLING WHEN WORKING WITH TRANSFORMERS?

C 134 C2-9 DO YOU CALCULATE TURNS RATIOS FOR TRANSFORMERS USING CURRENT OR VOLTAGE RATIOS?

C 135 C2-10 DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH TRANSFORMERS?

C 136 C2-11 DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR TRANSFORMERS?

C 137 C2-12 DO YOU WORK WITH AUTOTRANSFORMERS?

C 138 C2-13 DO YOU WORK WITH POWER TRANSFORMERS?

C 139 C2-14 DO YOU WORK WITH AUDIO TRANSFORMERS?

C 140 C2-15 DO YOU WORK WITH RADIO FREQUENCY TRANSFORMERS?

304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
35.8	33.6	36.5	15.4	34.3	31.7	4.7	24.6	19.5	37.9
41.5	36.1	38.1	14.7	28.7	23.2	7.0	19.0	14.0	36.8
26.8	26.2	23.0	7.4	9.8	9.2	7.0	13.4	6.7	20.7
65.0	70.5	65.9	30.1	68.5	69.7	16.3	47.9	34.1	77.0
58.5	68.9	63.5	29.4	66.4	62.0	9.3	43.7	23.2	72.4
66.7	72.1	66.7	58.1	71.3	76.1	25.6	61.3	53.7	79.3
65.9	68.9	65.1	48.5	67.1	74.6	20.9	59.2	56.1	73.6
61.0	66.4	60.3	44.9	68.5	75.4	41.9	54.9	51.2	74.7
54.5	66.4	62.7	45.6	61.8	72.5	37.2	50.0	54.3	74.7
41.5	53.3	50.0	36.0	47.6	45.8	14.0	34.5	34.1	40.2
38.2	50.8	45.2	17.6	49.0	49.3	9.3	23.2	20.1	55.2
55.3	63.1	56.3	31.6	64.3	62.7	30.2	39.4	46.3	66.7
7.3	7.4	9.5	2.2	2.8	7.0	.0	3.5	3.0	6.0
7.3	9.0	9.5	1.5	5.6	7.0	.0	5.6	3.7	10.3
15.4	15.6	15.9	3.7	13.3	14.8	2.3	10.6	9.8	13.8
13.0	18.0	22.2	5.9	13.3	11.3	4.7	7.7	6.7	11.5
18.7	15.6	21.4	2.2	10.5	14.1	4.7	11.3	7.9	17.2
10.6	5.7	10.3	3.7	3.5	4.9	.0	4.9	2.4	9.2
35.0	51.6	32.5	14.7	40.6	33.8	4.7	22.5	17.1	54.0
57.7	67.2	57.1	47.1	68.5	71.8	41.9	56.3	54.3	73.6
56.9	63.1	64.3	17.6	69.9	66.9	4.7	37.3	25.0	74.7
52.8	62.3	61.1	6.6	66.4	67.6	18.6	43.0	23.8	72.4

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TITLES

2-16 DO YOU WORK WITH SATURABLE CORE TRANSFORMERS?

22-17 DO YOU WORK WITH SENSING TRANSFORMERS?

2-18 DO YOU WORK WITH CONTROL TRANSFORMERS?

22-19 00 YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY

MEASURING RESISTANCE?

2-20 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY

MEASURING RESISTANCE?

MEASURING RESISTANCE, — DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY

2. DO YOU CHECK VOLTAGE?

MEASURING OUTPUT VOLTAGE

DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN

TURNING RATIO?

22-23 DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO

DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN

TURNING RATIO?

DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS?

2-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS?

SYMBOLS FOR TRANSFORMERS?

22-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR

TRANSFORMERS?

22-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR

TRANSFORMERS?

2-20 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR

DO YOU HAVE THE RIGHT SYMBOLS FOR TRANSFORMERS?

2-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS

FOR TRANSFORMERS?

FOR TRANSFORMERS
22-30 DO YOU REFER TO VARIABLE TRANSFORMER SCHEMATIC

4-30 00 100 REFER TO ATTACHED TRANSMISSION GENERATED SYMBOLS?

22-31 DO YOU REFER TO COMBINATIONS OF SCHEMATIC

DO YOU EVER REFER TO COMBINATIONS OF SYMBOLIC FOR TRANSFORMERS?

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D TSK	TITLES	304 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
D 190	D1-11 DO YOU USE OR REFER TO APPARENT POWER (P SUB A) WHEN WORKING WITH RCL CIRCUITS?	23.6	20.5	23.0	5.9	20.3	20.4	4.7	14.1	9.1	23.0
D 191	D1-12 DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING WITH RCL CIRCUITS?	22.8	27.9	27.8	5.9	17.5	21.1	2.3	17.6	9.8	26.4
D 192	D1-13 DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN WORKING WITH RCL CIRCUITS?	49.6	54.9	50.8	14.7	51.7	45.1	9.3	38.0	20.7	50.6
D 193	D1-14 DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH RCL CIRCUITS?	53.7	59.8	56.3	5.9	58.0	56.3	18.6	42.3	23.2	55.2
D 194	D1-15 DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH RCL CIRCUITS?	42.8	55.7	54.8	6.6	58.0	52.8	11.6	38.7	17.7	52.9
D 195	D1-16 DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN WORKING WITH RCL CIRCUITS?	51.2	57.4	54.0	11.8	53.8	49.3	9.3	38.7	23.2	50.6
D 196	D1-17 DO YOU USE OR REFER TO HALF POWER POINTS WHEN WORKING WITH RCL CIRCUITS?	44.7	50.8	35.7	3.7	24.5	50.7	16.3	35.9	12.2	40.2
D 197	D1-18 DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING WITH RCL CIRCUITS?	45.5	50.8	41.3	5.9	40.6	45.8	16.3	40.1	20.7	46.0
D 198	D1-19 DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH RCL CIRCUITS?	35.8	51.6	38.1	5.9	27.3	31.7	4.7	21.1	11.6	31.0
D 199	D1-20 DO YOU USE OR REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS?	42.0	59.8	53.2	15.4	51.7	50.0	7.0	31.0	18.9	54.0
D 200	D1-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS SUCH AS: SINE OF AND ANGLE = OPPOSITE SIDE/HYPOTENUSE?	10.6	25.4	8.7	1.5	4.2	8.5	4.7	4.9	18.3	8.0
D 201	D1-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS?	10.6	23.0	12.7	3.7	7.7	12.0	2.3	4.9	4.9	11.5
D 202	D1-23 DO YOU USE OR REFER TO TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS?	26.8	30.3	23.8	7.4	18.9	23.9	4.7	14.1	9.1	21.8
D 203	D1-24 DO YOU USE OR REFER TO PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS?	15.4	23.0	16.7	4.4	11.9	15.5	4.7	12.0	7.3	18.4
D 204	D1-25 DO YOU USE OR REFER TO TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS?	28.5	32.8	31.0	5.1	23.8	23.9	4.7	16.2	9.1	23.0

D TSM	TITLES												
		304 (M)	304 (M)	304 (M)	305 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)
D 205	D1-26 DO YOU USE OR REFER TO IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS?	13.0	10.0	17.5	3.7	12.6	9.9	4.7	4.9	3.7	12.6		
D 206	D1-27 DO YOU USE OR REFER TO APPARENT POWER (P SUB A) FOR SERIES RCL CIRCUITS?	17.1	15.6	17.5	2.9	11.2	19.0	4.7	11.3	6.7	17.2		
D 207	D1-28 DO YOU USE OR REFER TO TRUE POWER (P SUB T) FOR SERIES RCL CIRCUITS?	17.9	25.4	24.6	2.9	16.1	21.0	4.7	12.7	8.5	24.1		
D 208	D1-29 DO YOU USE OR REFER TO POWER FACTORS (PF) FOR SERIES RCL CIRCUITS?	13.0	21.3	23.0	2.9	9.1	17.6	2.3	13.4	6.7	17.2		
D 209	D1-30 DO YOU USE OR REFER TO TOTAL CURRENT FOR PARALLEL RCL CIRCUITS?	25.2	31.1	27.0	6.6	21.7	27.5	4.7	15.5	9.1	21.0		
D 210	D1-31 DO YOU USE OR REFER TO IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS?	11.4	15.6	15.9	3.7	10.5	9.9	2.3	7.0	4.3	12.6		
D 211	D1-32 DO YOU USE THE ASSUMED VOLTAGE METHOD FOR DETERMINING TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS?	8.1	15.6	18.3	2.9	6.3	11.3	0	9.2	6.7	11.5		
D 212	D1-33 DO YOU USE OHM'S LAW FOR DETERMINING TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS?	30.9	36.9	35.7	8.0	26.6	28.2	4.7	19.1	12.8	26.4		
D 213	D1-34 DO YOU CHECK CAPACITORS USING OHMMETERS?	49.6	56.6	50.0	25.0	53.1	57.0	4.7	42.3	33.5	51.7		
D 214	D1-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION?	35.0	35.2	35.7	19.9	49.7	49.3	2.3	27.5	26.0	40.2		
D 215	D1-36 DO YOU CHECK INDUCTORS USING OHMMETERS?	44.7	50.0	50.8	22.1	54.5	53.5	4.7	39.4	31.7	48.3		
D 216	D1-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION?	31.7	30.3	30.2	16.9	46.9	49.3	2.3	26.1	25.0	36.0		
D 217	D1-38 DO YOU CHECK RESISTORS USING OHMMETERS?	52.0	59.0	53.2	27.9	60.1	58.5	11.6	44.4	36.0	54.0		
D 218	D1-39 DO YOU CHECK RESISTORS USING SUBSTITUTION?	29.3	27.0	24.6	14.7	47.6	46.5	2.3	26.8	24.4	35.6		
D 219	D1-40 DO YOU USE OR REFER TO THE RULE THAT PHASE ANGLE (THETA) = 0, POWER FACTOR (PF) = 1, AND APPARENT POWER (P SUB A) = TRUE POWER (P SUB I) FOR RESONANT CIRCUITS?	7.3	18.0	9.5	1.5	4.2	7.0	2.3	5.6	4.9	11.5		
D 220	D1-41 DO YOU USE OR REFER TO RESONANT FREQUENCIES FOR RCL CIRCUITS?	46.3	51.6	46.8	9.6	42.7	42.3	7.0	31.7	19.5	37.9		
D 221	D1-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS?	34.1	43.4	43.7	7.4	34.3	31.7	7.0	15.5	12.0	20.7		

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D 222 01-43 DO YOU USE OR REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS?

0 223 DI-44 DO YOU USE OR REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 OF THE PEAK CURRENT VALUE?

0 224 01-45 DO YOU USE OR REFER TO THE GENERAL RULE THAT
SANDWICH IS INVERSELY PROPORTIONAL TO THE QUALITY OF THE
COIL 1017

COIL IQ17
D 225 DL-46 DO YOU DETERMINE HOW CHANGES IN FREQUENCY,
RESISTANCE, CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT
OR PHASE ANGLES FOR RCL CIRCUITS?

OR CHANGE ANSWERS FOR NCL CIRCUITS?
D 226 D2-1 IN YOUR PRESENT JOB, DO YOU WORK WITH, USE, OR REFER
TO TIME CONSTANT? IF NO, GO TO ITEM D3-1; IF YES,
CONTINUE.

0 227 DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (TC)?

Q 220 02-3 DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS?
Q 229 02-4 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT
CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR
RC OR LR CIRCUITS?

230 Q2-5 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS?

Q 231 DO-6 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES?

Q 232 D2-7 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OR ZERO) AFTER FIVE (5) TIME CONSTANTS?

304	304	305	328	328	328	328
70	71	74	70	71	72	73
(M)	(M)	(M)	(M)	(M)	(M)	(M)
						74
						(M)
						75
						(M)

32.5	37.7	39.7	3.7	30.8	26.8	4.7	11.3	9.1	23.0
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	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2
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22.8	32.0	31.0	4.4	18.2	21.1	4.7	11.3	6.1	19.5
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20.3	32.8	24.6	6.6	18.2	20.4	7.0	9.2	7.3	23.0
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22.0	43.4	33.3	16.2	12.6	33.8	9.3	19.0	11.0	27.6
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4.6	27.0	21.4	8.1	10.5	20.4	7.0	12.7	9.8	19.5
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Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
9.8	17.2	10.3	5.1	4.9	9.9	4.7	7.0	2.4	8.0	
0.4	20.5	11.1	5.1	4.9	9.9	4.7	7.0	2.4	8.0	

0.6	20.5	11.1	8.1	4.9	11.3	2.3	0.9	3.7	11.5
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2.2	19.7	14.3	5.9	4.2	12.0	2.3	5.6	5.5	12.6
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0.6	22.1	14.3	5.9	5.6	9.9	2.3	5.6	3.7	12.6
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Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
3.0	22.1	18.3	5.9	7.0	17.6	2.3	9.2	5.5	14.9		

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TITLES

3-2 DO YOU INSPECT FILTER CIRCUITS?

DO 235 03-3 DO YOU CLEAN FILTER CIRCUITS?

CIRCUITS?

TER CIRCUIT LEVEL?

RECENT PARTS OF

FILTER CIRCUITS?

FIRST?

YEARS?

TESTS?

FILTEAS?

FILTER CONFIGURATIONS?

FILTER CONFIGURATIONS?

FILTER CONFIGURATIONS?

FILTER CONFIGURATIONS?

IN GARNET (VIG) FILTERS?

PLAS TO DETERMINE

REQUIRED FOR SPECIFIC

RELAYS (E31)

PRESENT JOB? IF NO, GO TO ITEM E2-1; IF YES, CONTINUE.

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O	ISM	TITLES	304 7C (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
E 250	E1-2	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC COUPLING?	51.2	63.1	55.6	27.9	54.5	59.9	16.3	47.2	29.9	54.0
E 251	E1-3	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH IMPEDANCE COUPLING (MATCHING)?	53.7	62.3	57.9	22.1	58.7	56.3	20.9	45.1	27.4	56.3
E 252	E1-4	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH OPTICAL COUPLING?	6.1	9.0	8.7	9.6	2.8	7.7	23.3	4.2	2.4	12.6
E 253	E1-5	DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH TRANSFORMER COUPLING?	52.8	63.1	57.9	24.3	55.9	60.6	20.9	40.8	28.0	58.6
E 254	E1-6	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM RC COUPLING?	44.7	58.2	53.2	25.7	52.4	54.9	9.3	38.7	28.7	51.7
E 255	E1-7	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM IMPEDANCE COUPLING?	43.9	59.0	54.8	19.1	55.2	50.7	18.6	35.2	25.6	52.9
E 256	E1-8	DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM TRANSFORMER COUPLING?	45.5	58.2	53.2	20.6	52.4	55.6	18.6	35.2	28.0	55.2
E 257	E1-9	DO YOU WORK WITH DIRECT COUPLED CIRCUITS?	51.2	57.4	56.3	26.5	52.4	58.5	23.3	45.1	30.5	57.5
E 258	E1-10	DO YOU WORK WITH CAPACITIVE-PERSISTIVE COUPLED CIRCUITS?	52.0	59.0	57.1	26.5	54.5	58.5	16.3	40.8	28.7	54.0
E 259	E1-11	DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED CIRCUITS?	49.0	55.7	55.6	18.4	54.5	57.0	11.6	38.7	24.4	54.0
E 260	E1-12	DO YOU WORK WITH OPTICAL COUPLING?	6.5	6.6	9.5	8.1	2.1	5.6	23.3	2.8	1.8	12.6
E 261	E1-13	DO YOU WORK WITH OPTICAL COUPLING CIRCUITS?	8.1	6.6	9.5	8.1	2.1	4.9	23.3	2.8	1.8	12.6
E 262	E1-14	DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS?	51.2	62.3	56.3	23.5	53.8	61.3	25.6	39.4	30.5	57.5
E 263	E2-1	IN YOUR PRESENT JOB, DO YOU CONNECT ELECTRONIC CIRCUITS USING SOLDERLESS CONNECTIONS OR SOLDERING TECHNIQUES? IF NO, GO TO ITEM E3-1; IF YES, CONTINUE.	61.0	60.7	61.9	57.4	81.8	74.6	23.3	73.9	74.4	71.3
E 264	E2-2	DO YOU SOLDER CONNECTIONS?	60.2	61.5	62.7	53.7	81.1	75.4	20.9	70.4	73.8	73.6
E 265	E2-3	DO YOU DESOLDER CONNECTIONS?	60.2	61.5	62.7	53.7	79.7	74.6	20.9	70.4	73.8	73.6

D TSK	TITLES	304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
E 266	F2-4 DO YOU PERFORM HIGH RELIABILITY SOLDERING?	43.9	51.6	53.2	44.1	46.9	47.2	14.0	55.6	53.7	56.3
E 267	F2-5 DO YOU INSPECT SOLDERED CONNECTIONS?	60.2	63.9	65.1	54.4	81.8	75.4	23.3	72.5	74.4	73.6
E 268	F2-6 DO YOU CLEAN OR TIN CONNECTIONS?	60.2	61.5	62.7	51.5	77.6	72.5	20.9	69.7	73.2	73.6
E 269	F2-7 DO YOU MAKE HARDWIRE CONNECTIONS?	57.7	58.2	61.9	51.5	78.3	70.4	20.9	66.2	68.3	73.6
E 270	F2-8 DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS?	58.5	56.6	61.1	52.2	66.4	62.0	14.0	57.7	51.2	67.8
E 271	F2-9 DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS?	58.5	61.5	61.1	52.2	69.9	66.2	14.0	60.6	57.9	71.3
E 272	F2-10 DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS?	57.7	58.2	61.1	50.7	67.1	64.1	14.0	57.7	55.5	70.1
E 273	F2-11 DO YOU SOLDER ACTIVE COMPONENTS, SUCH AS INTEGRATED CIRCUITS?	39.8	40.2	51.6	36.8	42.0	45.8	11.6	47.9	26.8	63.2
E 274	F2-12 DO YOU PERFORM WIRE WRAPPING IN LIEU OF SOLDERING?	37.4	20.5	22.2	33.1	14.7	12.7	18.6	19.7	10.4	24.1
E 275	F2-13 DO YOU PERFORM CRIMPING IN LIEU OF SOLDERING?	47.2	43.4	40.5	42.6	67.8	61.3	16.3	62.0	69.5	67.8
E 276	F2-14 DO YOU PERFORM WIRE CONNECTIONS USING A 714 PUNCH-ON TOOL IN LIEU OF SOLDERING?	20.3	3.3	11.1	8.8	10.5	8.5	.0	.7	8.5	14.9
E 277	F3-1 DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB? IF NO, GO TO ITEM F1-1; IF YES, CONTINUE.	58.5	65.6	54.8	50.0	80.4	78.2	48.8	61.3	79.3	79.3
E 278	F3-2 DO YOU ADJUST RELAYS?	35.8	46.7	42.1	23.5	35.7	29.6	2.3	16.9	13.4	39.1
E 279	F3-3 DO YOU CLEAN RELAYS?	45.5	54.9	50.8	34.6	51.0	45.1	9.3	32.4	27.8	53.7
E 280	F3-4 DO YOU INSPECT RELAYS?	51.2	61.5	54.8	42.6	64.3	66.9	23.3	50.0	57.9	66.7
E 281	F3-5 DO YOU TROUBLESHOOT RELAYS?	48.8	61.5	56.3	44.1	78.3	65.5	34.9	55.6	72.0	72.4
E 282	F3-6 DO YOU MONITOR BIAS OUTPUT ON RELAYS?	22.0	18.9	21.4	10.3	20.3	12.0	11.6	12.0	9.1	16.1
E 283	F3-7 DO YOU REMOVE OR REPLACE RELAYS?	48.8	56.6	56.3	45.6	74.1	66.2	20.9	57.0	73.2	72.4
E 284	F3-8 DO YOU PERFORM TASKS ON CONTACTS OF RELAYS?	43.1	57.4	53.2	32.4	45.5	40.1	4.7	26.8	20.1	37.9
E 285	F3-9 DO YOU PERFORM TASKS ON COILS OF RELAYS?	12.2	13.9	18.3	11.0	12.6	6.3	.0	4.9	3.0	6.9
E 286	F3-10 DO YOU PERFORM TASKS ON ARMATURES OF RELAYS?	16.3	31.1	27.8	17.6	17.5	12.0	.0	5.6	6.1	13.8
E 287	F3-11 DO YOU PERFORM TASKS ON SPRINGS OF RELAYS?	18.7	28.7	31.0	21.3	16.1	18.3	.0	6.3	6.1	14.9
E 288	F3-12 DO YOU PERFORM TASKS ON SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAY?	20.3	34.4	34.1	24.3	19.6	14.1	2.3	9.9	6.1	14.9
E 289	F3-13 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAY?	52.0	64.8	58.7	42.6	73.4	70.4	34.9	58.5	70.7	73.6

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TITLES

MEASURING RESISTANCE?

OSCILLOSCOPES (F3)

TRANSDUCERS? IF NO, GO TO ITEM F2-1: IF YES, CONTINUE.

1-3 DO YOU CLEAN MICROPHONES?

1-800-4-A-DO YOU OPERATE MICROPHONES?

1-4 DO YOU OPERATE MICROPHONES?
1-5 DO YOU TROUBLESHOOT MICROPHONES WIRE CONNECTIONS?

100 PROBLEMS THAN WIRE CONNECTIONS?

1-7 DO YOU REMOVE AND REPLACE COMPLETE MICROPHONES?

1-800-DO YOU REMOVE OR REPLACE MICROPHONE COMPONENT PARTS?

1-8 DO YOU REMOVE OR REPLACE MICROPHONE CUFFS?
1-9 DO YOU PERFORM TASKS ON CARBON MICROPHONES?

1-9 DO YOU PERFORM TASKS ON CARBON MICROPHONES?

1-10 DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES?
1-11 DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES?

1-11 DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES?

1-12 DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES?
1-13 DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES?

[illegible]

304	304	305	328	328	328	328	328	328	328
70	74	74	70	71	72	73	74	75	(M)
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
52.0	64.8	57.9	42.6	72.7	71.8	37.2	58.5	70.1	73.6
49.6	60.7	55.6	38.2	72.7	69.7	34.9	57.0	67.7	74.7
50.4	60.7	55.6	36.8	72.7	68.3	30.2	54.9	66.5	74.7
44.7	59.8	50.8	36.0	65.7	67.6	39.5	54.9	62.8	69.0
44.7	58.2	54.0	34.6	68.5	64.1	14.0	51.4	57.9	54.4
26.0	27.9	54.0	15.4	81.8	23.2	18.6	20.4	11.6	65.5
22.0	23.8	54.0	5.9	71.3	18.3	4.7	16.2	3.7	57.5
19.5	19.7	43.7	3.7	51.0	10.6	2.3	12.0	1.2	39.1
22.0	25.4	50.8	8.8	83.9	22.5	16.3	16.9	7.3	65.5
22.0	23.0	52.4	5.9	76.9	20.4	2.3	16.9	4.9	59.8
14.6	16.4	38.9	3.7	40.6	8.5	.0	7.0	2.4	34.5
22.0	22.1	51.6	5.9	75.5	18.3	2.3	16.9	4.9	57.5
14.6	13.9	40.5	3.7	32.9	6.3	.0	5.6	1.2	32.2
10.5	18.9	50.0	3.7	58.7	16.9	.0	9.9	3.0	49.4
8.9	4.9	16.7	2.2	10.5	2.8	.0	4.9	.6	18.4
7.3	7.4	16.7	.7	11.2	4.9	.0	4.2	.6	16.1
10.6	12.3	51.6	1.5	77.6	15.5	2.3	8.5	.6	58.6
1.6	.8	4.8	.7	1.4	.0	.0	.7	.6	1.1

D TSM	TITLES	304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
F 330	F3-7 DO YOU USE OSCILLOSCOPES TO OBSERVE LISSAJOUS PATTERNS?	26.8	34.4	31.0	22.8	33.6	33.1	.0	14.1	31.7	67.8
F 331	F3-8 DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE JITTERING ATTENUATOR PROBES.	56.9	72.1	61.9	58.8	60.8	74.6	27.9	62.0	60.4	64.4
F 332	F3-9 DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME MEASUREMENTS USING DELAY TIME MULTIPLIERS?	22.8	66.4	31.7	49.3	25.2	67.6	37.2	42.3	32.9	46.0
F 333	F3-10 DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGES?	63.4	70.5	64.3	62.5	67.1	77.5	25.6	72.5	69.5	70.1
F 334	F3-11 DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGES?	63.4	71.3	64.3	67.6	59.4	78.2	41.9	73.9	68.3	70.1
F 335	F3-12 DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROL?	47.2	68.9	51.6	44.9	47.6	62.7	27.9	52.8	45.1	64.4
F 336	F3-13 DO YOU USE OSCILLOSCOPES TO OBSERVE DATA PATTERNS?	44.7	42.6	44.4	62.5	41.3	41.5	30.2	52.8	48.2	66.7
F 337	F3-14 DO YOU USE OSCILLOSCOPES TO MEASURE RIPPLE VOLTAGES?	60.2	69.7	62.7	56.6	42.7	62.7	20.9	57.7	48.2	66.7
F 338	F3-15 DO YOU USE OSCILLOSCOPES TO MEASURE PHASE JITTERS?	31.7	57.4	25.4	33.1	15.4	40.1	18.6	28.9	17.7	31.0
F 339	F3-16 DO YOU USE OSCILLOSCOPES TO DISPLAY SWEEP GENERATOR PATTERNS?	36.6	62.3	34.9	31.6	25.9	62.7	20.9	48.6	26.8	60.9
F 340	F3-17 DO YOU USE OSCILLOSCOPES TO OBSERVE PHASE RELATIONSHIPS?	43.9	54.9	39.7	54.4	36.4	65.5	27.9	53.5	50.0	59.8
F 341	F3-18 DO YOU USE OSCILLOSCOPES TO OBSERVE SAMPLING DISPLAYS?	33.3	60.7	37.3	37.5	33.6	50.0	23.3	52.8	39.6	55.2

6 SEMICONDUCTOR DIODES (G1), TRANSISTORS (G2), TRANSISTOR AMPLIFIERS (G3)

G 342	G1-1 DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT JOB? IF NO, GO TO ITEM G2-1; IF YES, CONTINUE.	65.9	66.4	66.7	58.8	68.5	76.8	34.9	59.9	64.0	75.9
G 343	G1-2 DO YOU INSPECT DIODES?	58.5	63.1	62.7	52.9	66.4	70.4	14.0	56.3	59.1	72.4
G 344	G1-3 DO YOU CHECK DIODES?	58.5	62.3	60.3	55.9	66.4	69.0	11.6	54.2	61.6	71.3

D TSM	TITLES																
		304 (M)	304 (P)	304 (M)	305 (M)	305 (M)	305 (M)	305 (M)	305 (M)	305 (M)	305 (M)	305 (M)	305 (M)	305 (M)	305 (M)	305 (M)	305 (M)
G 430	G3-24 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION?	18.7	21.3	27.0	5.9	17.5	21.8	7.0	14.8	9.1	20.7						
G 431	G3-25 DO YOU IDENTIFY OR TROUBLESHOOT AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS?	40.7	37.7	44.4	17.6	37.8	43.0	7.0	33.1	17.7	40.2						
G 432	G3-26 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS?	36.6	32.8	38.9	15.4	34.3	35.9	7.0	28.9	15.9	35.6						
G 433	G3-27 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS?	26.8	25.4	23.0	9.6	19.6	26.8	4.7	20.4	14.0	29.9						
G 434	G3-28 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING Emitter RESISTANCE FOR TRANSISTOR AMPLIFIERS?	21.1	23.8	26.2	6.6	14.7	19.0	7.0	16.2	8.5	18.4						
G 435	G3-29 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS?	22.8	25.4	31.0	5.9	19.6	25.4	7.0	15.5	7.9	17.2						
G 436	G3-30 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS?	18.7	21.3	20.6	2.9	23.8	41.5	7.0	25.4	13.4	25.3						
G 437	G3-31 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS?	37.4	50.0	54.8	16.9	48.3	51.4	7.0	34.5	23.2	49.4						
G 438	G3-32 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS?	22.0	24.6	29.4	9.6	25.2	31.7	4.7	24.6	12.2	31.0						
G 439	G3-33 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS?	24.4	35.2	28.6	3.7	25.2	37.3	9.3	23.9	10.4	19.1						
G 440	G3-34 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS?	30.9	45.1	42.9	9.6	33.6	47.2	11.6	30.3	16.5	42.5						
G 441	G3-35 DO YOU TROUBLESHOOT OR REPAIR VOLTAGE MULTIPLIERS (DOUBLERS/TRIPLERS)?	37.4	46.7	38.9	19.9	44.8	45.1	9.3	29.6	20.1	41.4						
G 442	G3-36 DO YOU TROUBLESHOOT OR REPAIR RF AMPLIFIERS?	46.3	50.0	53.2	7.4	53.8	54.9	18.6	43.0	18.9	57.5						
G 443	G3-37 DO YOU TROUBLESHOOT OR REPAIR WIDEBAND AMPLIFIERS (VIDEO AMPS)?	31.7	30.3	21.4	11.0	11.2	48.6	4.7	42.3	4.3	21.8						
G 444	G3-38 DO YOU TROUBLESHOOT OR REPAIR AUDIO AMPLIFIERS?	48.0	45.1	54.8	11.0	56.6	52.8	2.3	35.2	21.3	57.5						
G 445	G3-39 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL OR POWER AMPLIFIERS?	41.5	47.5	54.8	19.9	52.4	54.9	11.6	37.3	26.2	55.2						
G 446	G3-40 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS?	18.7	22.1	17.5	3.7	23.1	40.1	7.0	25.4	12.8	25.3						

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D TSM	TITLES	304 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
6 447 G3-41	DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY AMPLIFIERS?	21.1	23.8	25.4	8.2	17.5	31.0	4.7	25.4	10.4	29.9
6 448 G3-42	DO YOU TROUBLESHOOT OR REPAIR IF AMPLIFIERS?	43.9	48.4	52.4	5.9	53.8	54.9	16.3	40.1	22.0	52.9
6 449 G3-43	DO YOU TROUBLESHOOT OR REPAIR DIFFERENTIATING AMPLIFIERS (DIFF AMPS)?	29.3	41.8	36.5	22.8	21.0	35.9	9.3	35.9	17.7	39.1
6 450 G3-44	DO YOU TROUBLESHOOT OR REPAIR OPERATIONAL AMPLIFIERS (OP AMPS)?	31.7	44.3	37.3	21.3	24.5	38.0	11.6	36.6	25.0	33.3
6 451 G3-45	DO YOU TROUBLESHOOT OR REPAIR INTEGRATING AMPLIFIERS?	24.4	40.2	32.5	13.2	24.5	35.9	14.0	31.7	25.6	33.3
6 452 G3-46	DO YOU TROUBLESHOOT OR REPAIR SUMMING AMPLIFIERS?	16.3	25.4	17.5	8.1	13.3	22.5	11.6	23.2	25.0	32.2

M	SOLID-STATE SPECIAL PURPOSE DEVICES (H1), POWER SUPPLIES (H2), OSCILLATORS (H3)	-----									
M 453 H1-1	DO YOU USE OR REFER TO VARACTORS/VARICAP COMPONENTS?	55.3	36.9	59.5	14.7	57.3	46.5	25.6	46.5	11.6	65.5
M 454 H1-2	DO YOU USE OR REFER TO TUNNEL DIODE COMPONENTS?	61.0	49.2	39.7	11.8	44.1	40.8	14.0	47.2	14.6	56.3
M 455 H1-3	DO YOU USE OR REFER TO FIELD EFFECT TRANSISTOR (FET) COMPONENTS?	52.0	63.1	65.1	33.8	48.3	56.3	25.6	54.2	26.2	62.1
M 456 H1-4	DO YOU USE OR REFER TO UNIJUNCTION TRANSISTOR COMPONENTS?	45.5	63.1	57.9	25.7	52.4	60.6	23.3	48.6	20.1	57.5
M 457 H1-5	DO YOU USE OR REFER TO ZENER DIODE COMPONENTS?	69.9	77.0	73.8	63.2	67.8	76.1	44.2	63.4	51.2	71.3
M 458 H1-6	DO YOU USE OR REFER TO INTEGRATED CIRCUIT COMPONENTS?	67.5	74.6	71.4	69.1	67.8	74.6	69.8	71.1	56.7	71.3
M 459 H1-7	DO YOU USE OR REFER TO PIN DIODE COMPONENTS?	25.2	34.4	35.7	9.6	28.7	16.9	30.2	54.2	9.8	29.9
M 460 H1-8	DO YOU USE OR REFER TO LED'S/LCD'S COMPONENTS?	59.3	67.2	61.1	61.8	58.0	48.6	65.1	63.4	45.7	67.8
M 461 H1-9	DO YOU USE OR REFER TO FANTAIL TRANSISTOR COMPONENTS?	9.8	11.5	18.3	5.1	7.0	12.0	7.0	9.9	3.7	9.2
M 462 H1-10	DO YOU USE OR REFER TO SILICON CONTROL RECTIFIER (SCR) COMPONENTS?	57.7	66.4	61.9	44.9	44.1	57.0	18.6	49.3	29.9	63.2
M 463 H1-11	DO YOU USE OR REFER TO TRIAC COMPONENTS?	18.7	37.7	27.8	15.4	16.8	19.7	11.6	19.7	8.5	28.7
M 464 H1-12	DO YOU USE OR REFER TO PROGRAMMABLE UNIJUNCTION TRANSISTOR (PUT) COMPONENTS?	8.9	9.8	13.5	1.5	4.2	10.6	9.3	10.6	4.3	18.4

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D TSK	TITLES	304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
M 486	M2-20 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGES IN YOUR WORK WITH RECTIFIERS?	28.5	29.5	36.5	19.1	27.3	31.7	11.6	29.6	14.0	32.2
M 487	M2-21 DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS IN YOUR WORK WITH RECTIFIERS?	48.0	59.0	49.2	46.3	44.1	57.7	25.6	47.2	35.4	54.0
M 488	M2-22 DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	53.7	55.7	54.0	48.5	48.3	56.3	27.9	52.1	35.4	52.9
M 489	M2-23 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE FILTERS?	57.7	67.2	58.7	47.1	52.4	65.5	20.9	48.6	40.2	60.9
M 490	M2-24 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE FILTERS?	54.5	66.4	56.3	34.6	52.4	62.0	23.3	43.7	36.0	60.9
M 491	M2-25 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE INPUT L-TYPE FILTERS?	46.3	56.6	55.6	24.3	46.2	59.9	11.6	42.3	28.7	56.3
M 492	M2-26 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE INPUT L-TYPE FILTERS?	44.7	53.3	54.0	22.1	45.5	55.6	11.6	40.8	25.0	56.3
M 493	M2-27 DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE FILTERS?	46.3	54.9	53.2	19.1	46.2	51.4	14.0	38.7	21.3	49.4
M 494	M2-28 DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE FILTERS?	44.7	52.5	50.0	20.6	44.8	54.2	11.6	41.5	25.0	49.4
M 495	M2-29 DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF FILTER WITH A DIFFERENT TYPE FILTER?	4.9	4.9	4.8	.0	5.6	2.8	4.7	4.9	.6	2.3
M 496	M2-30 DO YOU WORK WITH POWER SUPPLY REGULATOR CIRCUITS OTHER THAN SOLID-STATE?	26.0	61.5	30.2	15.4	26.6	38.0	9.3	26.1	26.8	25.3
M 497	M2-31 DO YOU WORK WITH SOLID-STATE POWER SUPPLY REGULATOR CIRCUITS?	58.5	63.1	55.6	45.6	57.3	65.5	46.5	52.1	39.0	60.9
M 498	M3-1 DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 11-1; IF YES, CONTINUE.	56.9	67.2	54.8	36.8	59.4	58.5	60.5	56.3	32.9	69.0
M 499	M3-2 DO YOU INSPECT OSCILLATORS?	50.4	64.8	54.0	27.9	58.0	53.5	30.2	48.6	28.0	59.8
M 500	M3-3 DO YOU ALIGN OR ADJUST OSCILLATORS?	53.7	66.4	52.4	24.3	58.0	51.4	23.3	42.3	24.4	59.8
M 501	M3-4 DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS?	45.5	53.3	49.2	30.9	54.5	47.2	27.9	47.9	25.0	59.8
M 502	M3-5 DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS?	36.6	54.9	46.0	19.9	44.8	40.8	11.6	26.1	18.3	47.1
M 503	M3-6 DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL?	43.9	59.0	51.6	27.9	52.4	46.5	46.5	36.6	25.6	55.2

MEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
M 504	H3-7 DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS?	36.6	59.0	49.2	19.9	44.8	42.3	18.6	27.5	17.1	47.1
M 505	H3-8 DO YOU USE OR REFER TO FEEDBACK (DEGENERATIVE OR REGENERATIVE)?	45.5	62.3	45.2	20.6	46.9	45.1	27.9	36.6	23.2	47.1
M 506	H3-9 DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FUD)?	43.1	54.1	41.3	18.4	38.5	39.4	27.9	35.9	18.3	47.1
M 507	H3-10 DO YOU USE OR REFER TO AMPLITUDE STABILITY?	42.3	50.0	37.3	16.9	39.9	35.2	18.6	31.7	18.3	46.0
M 508	H3-11 DO YOU USE OR REFER TO FREQUENCY STABILITY?	53.7	61.5	50.0	22.1	56.6	42.3	48.8	41.5	25.0	58.6
M 509	H3-12 DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT (CRYSTAL OSCILLATIONS)?	30.9	46.7	32.5	12.5	35.7	29.6	14.0	23.9	11.6	44.8
M 510	H3-13 DO YOU USE OR REFER TO HARMONIC DISTORTION?	44.7	54.1	46.0	11.8	45.5	38.7	25.6	32.4	12.2	50.6
M 511	H3-14 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN DC TANK CIRCUITS?	38.2	46.7	42.1	14.0	40.6	37.3	11.6	31.0	12.2	44.8
M 512	H3-15 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN RC NETWORKS?	41.5	62.3	49.2	20.6	48.3	46.5	9.3	34.5	20.1	51.7
M 513	H3-16 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN CRYSTALS?	55.3	66.4	53.2	28.7	54.5	52.1	48.8	39.4	19.5	58.6
M 514	H3-17 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN PHASE LOCK LOOPS (PLL)?	43.1	36.1	44.4	15.4	37.1	21.8	55.8	22.5	7.3	49.4
M 515	H3-18 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN - DON'T KNOW WHICH TYPE OF FDD?	4.9	8.2	10.3	7.4	18.2	14.1	2.3	12.7	12.8	16.1
M 516	H3-19 DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS?	25.2	46.7	37.3	9.6	39.9	37.3	7.0	26.1	10.4	42.5
M 517	H3-20 DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS?	18.7	36.1	31.0	10.3	39.2	37.3	7.0	24.6	11.6	40.2
M 518	H3-21 DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS?	26.8	44.3	40.5	9.6	39.2	40.1	4.7	25.4	9.8	44.8
M 519	H3-22 DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS?	11.4	14.8	11.9	2.9	16.1	12.7	2.1	14.1	3.7	18.4
M 520	H3-23 DO YOU WORK WITH VOLTAGE CONTROL SINUSOIDAL OSCILLATORS?	41.5	32.0	41.3	12.5	39.2	38.7	44.2	35.2	13.4	48.3
M 521	H3-24 DO YOU WORK WITH CRYSTAL SINUSOIDAL OSCILLATORS?	52.0	63.1	50.0	25.7	51.0	48.6	44.2	33.1	16.5	55.2
M 522	H3-25 DO YOU WORK WITH VOLTAGE CONTROL OSCILLATORS (VCO) SINUSOIDAL OSCILLATORS?	48.8	32.8	42.9	14.0	44.1	41.5	51.2	43.0	11.0	46.0

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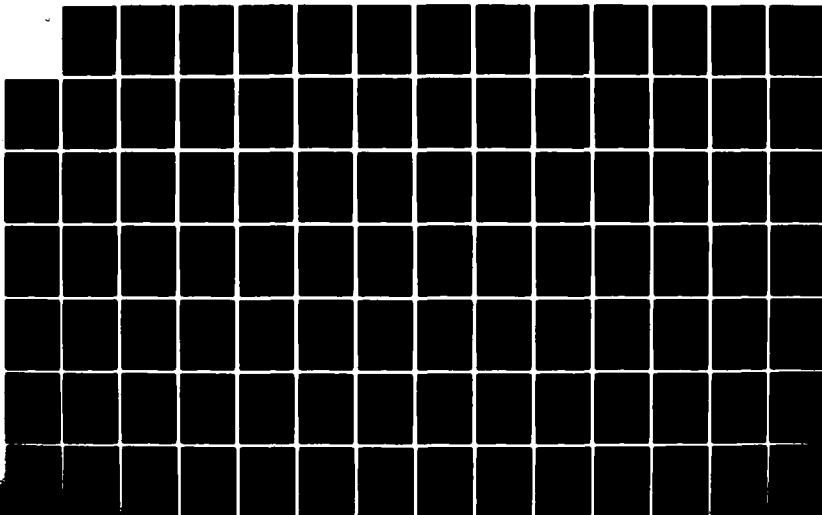
ELECTRONIC PRINCIPLES INVENTORY KEESLER TECHNICAL
TRAINING CENTER(U) AIR FORCE OCCUPATIONAL MEASUREMENT
CENTER RANDOLPH AFB TX M THOMASSON APR 84

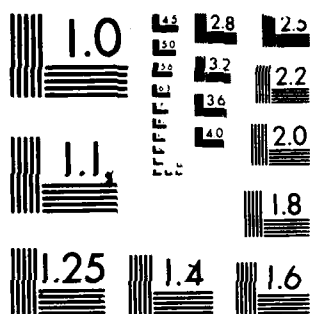
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O TSK TITLES

M 523 M3-26 DO YOU WORK WITH WIEN BRIDGE OSCILLATORS SINUSOIDAL OSCILLATORS?
 M 524 M3-27 DO YOU WORK WITH - DON'T KNOW WHICH TYPE OF SINUSOIDAL OSCILLATOR?
 M 525 M3-28 DO YOU WORK WITH PULSE GENERATING CIRCUITS?
 M 526 M3-29 DO YOU WORK WITH BLOCKING OSCILLATORS?
 M 527 M3-30 DO YOU WORK WITH BURST GENERATORS?
 M 528 M3-31 DO YOU WORK WITH BLOCKED OSCILLATORS?

I MULTIVIBRATORS (11), LIMITERS AND CLAMPERS (12), ELECTRON TUBES (13)

I 529 I1-1 DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB?
 IF NO, GO TO ITEM 12-1; IF YES, CONTINUE.
 I 530 I1-2 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK CIRCUIT FREQUENCY DETERMINING DEVICES (FDD)?
 I 531 I1-3 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC NETWORK FREQUENCY DETERMINING DEVICES (FDD)?
 I 532 I1-4 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTAL FREQUENCY DETERMINING DEVICES (FDD)?
 I 533 I1-5 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN - DON'T KNOW WHICH TYPE OF FDD?
 I 534 I1-6 DO YOU WORK WITH A STABLE (FREE RUNNING) MULTIVIBRATORS?
 I 535 I1-7 DO YOU WORK WITH MONOSTABLE (ONE SHOT) MULTIVIBRATORS?
 I 536 I1-8 DO YOU WORK WITH BISTABLE (FLIP FLOP) MULTIVIBRATORS?
 I 537 I1-9 DO YOU WORK WITH R-S FLIP-FLOP INTEGRATED CIRCUIT REGULATORS?

304	304	304	305	328	328	328	328	328	328	328	328	328	328
70	71	74	74	70	71	72	73	74	75	76	77	78	79
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
11.4	31.1	20.6	4.4	18.2	16.9	.0	15.5	8.5	23.0				
13.0	16.4	13.5	14.7	21.0	16.9	4.7	14.8	15.2	21.8				
35.0	61.5	31.7	26.5	32.9	54.2	51.2	39.4	20.1	48.3				
21.1	45.9	20.6	12.5	23.8	50.7	14.0	28.9	18.3	28.7				
8.9	46.7	11.9	9.6	6.3	31.7	11.6	12.7	2.4	10.3				
8.1	33.6	12.7	8.1	17.5	34.5	11.6	16.2	7.9	19.5				
40.7	63.1	45.2	43.4	37.8	57.0	37.2	35.9	26.2	51.7				
29.3	48.4	31.0	16.9	30.8	48.6	11.6	26.8	16.5	35.6				
35.0	55.7	35.7	30.9	32.9	54.2	14.0	31.7	22.0	39.1				
26.8	44.3	30.2	25.7	28.7	45.8	16.3	27.5	11.6	36.8				
9.8	13.9	9.5	9.6	11.9	13.4	14.0	6.3	7.3	8.0				
38.2	58.2	35.7	31.6	31.5	55.6	10.2	32.4	19.5	46.0				
38.2	62.3	42.1	41.2	31.5	54.9	32.6	35.2	25.0	46.0				
43.1	64.8	42.9	43.4	37.1	56.3	39.5	35.9	27.4	49.4				
20.3	35.2	16.7	24.3	13.3	21.1	32.6	26.1	15.9	35.6				

D TSH	TITLES	304 (M)	304 71 (M)	304 74 (M)	305 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
I 561	13-12 DO YOU USE OR REFER TO SATURATION?	19.5	48.4	35.7	2.9	27.3	35.2	.0	19.7	16.5	20.7
I 562	13-13 DO YOU USE OR REFER TO DC PLATE RESISTANCE?	13.8	32.8	28.6	.7	25.2	23.2	.0	13.4	11.0	16.1
I 563	13-14 DO YOU USE OR REFER TO PLATE VOLTAGE?	27.6	60.7	52.4	7.4	47.6	46.5	.0	23.9	24.4	42.5
I 564	13-15 DO YOU USE OR REFER TO PLATE CURRENT?	22.0	53.3	46.0	5.9	39.9	35.2	.0	19.7	19.5	37.9
I 565	13-16 DO YOU USE OR REFER TO GRID VOLTAGE?	28.5	61.5	52.4	8.1	49.0	44.4	2.3	23.9	23.2	43.7
I 566	13-17 DO YOU USE OR REFER TO GRID CURRENT?	22.0	50.8	44.4	6.6	39.9	35.9	.0	19.7	20.7	36.8
I 567	13-18 DO YOU USE OR REFER TO CATHODE VOLTAGE?	29.3	60.7	51.6	7.4	46.2	44.4	2.3	24.6	23.8	39.1
I 568	13-19 DO YOU USE OR REFER TO CATHODE CURRENT?	22.0	48.4	40.5	5.9	37.8	35.2	.0	19.7	19.5	33.3
I 569	13-20 DO YOU USE OR REFER TO FILAMENT VOLTAGE?	29.3	61.5	53.2	11.8	48.3	46.5	.0	25.4	23.2	41.4
I 570	13-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)?	8.1	21.3	17.5	.0	18.9	16.9	.0	3.5	6.7	8.0
I 571	13-22 DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE, ETC.) AMPLIFICATION FACTORS?	11.4	20.5	17.5	.7	16.8	18.3	.0	7.7	7.9	8.0
I 572	13-23 DO YOU USE OR REFER TO ELECTRON TUBE TRANSMITTANCE (G, WHICH IS MEASURED IN MHOS)?	7.3	13.1	11.9	.0	8.4	12.0	.0	7.0	4.9	3.4
I 573	13-24 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER CALLED AC PLATE RESISTANCE?	7.3	13.9	12.7	.7	9.1	9.2	.0	4.9	4.3	5.7
I 574	13-25 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE CAPACITANCE?	16.3	25.4	22.2	.0	21.0	21.8	.0	10.6	5.5	14.9
I 575	13-26 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR WORK WITH ELECTRON TUBES?	8.1	13.9	8.7	.0	10.5	7.0	.0	2.8	3.7	5.7
I 576	13-27 DO YOU USE OR REFER TO PLATE VOLTAGE FOR A SPECIFIED BIAS?	13.0	35.2	27.8	2.2	26.6	21.1	.0	12.7	11.0	14.9
I 577	13-28 DO YOU USE OR REFER TO PLATE CURRENT FOR A SPECIFIED BIAS?	10.6	30.3	27.0	1.5	23.8	19.0	.0	12.0	11.0	11.5
I 578	13-29 DO YOU USE OR REFER TO BIAS REQUIRED FOR CUTOFF?	20.3	50.8	27.8	3.7	27.3	28.2	.0	12.0	12.2	18.4
I 579	13-30 DO YOU USE OR REFER TO BIAS REQUIRED FOR SATURATION?	19.5	48.4	26.2	2.9	24.5	26.8	.0	11.3	11.6	13.8
I 580	13-31 DO YOU USE OR REFER TO GAIN?	24.4	41.0	42.1	2.9	31.5	36.6	.0	21.1	16.5	26.4
I 581	13-32 DO YOU USE OR REFER TO EFFICIENCY?	16.3	28.7	23.0	.7	23.8	23.2	.0	9.9	10.4	16.1

Q	TSH	TITLES	304 (H)	304 71 (H)	304 74 (H)	305 74 (H)	328 70 (H)	328 71 (H)	328 72 (H)	328 73 (H)	328 74 (H)	328 75 (H)
I 582	13-33	DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN?	18.7	42.6	34.9	3.7	35.7	30.3	.0	16.9	13.4	28.7
I 583	13-34	DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN?	21.1	51.6	43.7	5.1	33.6	40.1	.0	19.0	15.2	26.4
I 584	13-35	DO YOU USE CHARACTERISTIC CURVES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN?	7.3	10.7	7.1	.7	7.0	8.5	.0	4.2	3.0	5.7
I 585	13-36	DO YOU USE OR REFER TO TUBE SOCKET NOTATION?	25.2	59.0	49.2	10.3	44.1	40.8	.0	22.5	23.2	39.1
I 586	13-37	DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS?	27.6	61.5	52.4	11.8	49.7	45.8	.0	22.5	25.6	41.4
I 587	13-38	DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL SUCH AS MANUALS OR CHARTS?	22.0	50.8	51.3	5.1	32.2	28.9	.0	16.9	14.3	23.0
I 588	13-39	DO YOU USE OR REFER TO ELECTRON TUBE DIODEST	20.3	50.8	34.9	2.9	28.7	35.9	.0	14.1	15.2	12.6

J ELECTRON TUBE AMPLIFIERS AND CIRCUITS (J31), SPECIAL PURPOSE ELECTRON TUBES (J21), METEODYNYING AND MODULATION - DEMODULATION (MODENS) (J33)

J 589 J1-1 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS IN YOUR PRESENT JOB? IF NO, GO TO ITEM J2-1; IF YES, CONTINUE.	39.0	58.2	49.2	8.8	45.5	45.1	16.3	26.1	25.0	42.5
J 590 J1-2 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS?	13.0	27.0	20.6	1.5	9.0	14.8	4.7	7.0	6.1	0.0
J 591 J1-3 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS?	12.2	21.3	12.7	.7	20.3	29.6	2.3	9.9	7.9	11.5
J 592 J1-4 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS?	24.4	52.5	43.7	2.9	39.2	38.7	2.3	14.6	14.0	10.4
J 593 J1-5 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIER?	16.3	27.9	22.2	.7	23.8	23.2	2.3	12.0	7.9	17.2
J 594 J1-6 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIER?	17.9	49.2	34.1	2.2	21.0	35.2	4.7	17.6	9.8	17.2

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D	Tsk	TITLES	304	304	304	304	305	3' 8	328	328	328	328	328
			70	71	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
J 595	J1-7	DO YOU TROUBLESHOOT OR REPAIR - DON'T KNOW WHICH TYPE OF AMPLIFIER?	9.8	13.9	5.6	4.4	15.4	10.6	7.0	3.5	9.8	18.4	
J 596	J2-1	DO YOU WORK WITH GAS TUBES (HOT CATHODE OR COLD CATHODE)?	12.7	56.6	20.6	5.9	21.0	39.4	4.7	22.5	15.2	19.5	
J 597	J2-2	DO YOU WORK WITH CATHODE-RAY TUBES (CRT)?	29.3	45.1	35.7	54.4	21.0	67.6	14.0	67.6	29.9	28.7	
J 598	J2-3	DO YOU WORK WITH BEAM POWER TUBES?	24.4	47.5	15.9	3.7	8.4	14.8	46.5	18.3	3.0	13.8	
J 599	J2-4	DO YOU WORK WITH THERMIONS?	6.5	43.4	7.1	5.9	15.4	55.6	7.0	13.4	9.8	8.0	
J 600	J2-5	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)?	28.5	25.4	27.0	34.6	10.5	41.5	27.9	49.3	15.9	13.8	
J 601	J2-6	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)?	25.2	22.1	27.8	30.9	9.8	48.6	27.9	44.4	14.0	13.8	
J 602	J2-7	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)?	17.9	20.5	21.4	27.9	10.5	41.5	18.6	33.1	12.2	12.6	
J 603	J2-8	DO YOU USE OR REFER TO PHOSPHOR SCREENS CONCERNING CRT'S?	18.7	23.0	34.1	45.6	12.6	31.0	11.6	39.4	15.9	18.4	
J 604	J2-9	DO YOU USE OR REFER TO AQUADAG COATINGS CONCERNING CRT'S?	14.6	19.7	24.6	33.1	9.1	30.3	7.0	34.5	15.2	17.2	
J 605	J2-10	DO YOU USE OR REFER TO ELECTRON OPTICS CONCERNING CRT'S?	9.8	9.0	15.1	15.4	4.2	10.6	9.3	10.6	6.1	5.7	
J 606	J2-11	DO YOU USE OR REFER TO PERSISTENCE CONCERNING CRT'S?	18.7	15.6	31.7	22.1	7.0	35.2	7.0	50.7	20.7	36.8	
J 607	J2-12	DO YOU USE OR REFER TO DECAY TIMES CONCERNING CRT'S?	12.2	13.1	27.0	16.9	4.9	23.9	7.0	26.1	12.2	14.9	
J 608	J2-13	DO YOU USE OR REFER TO FLOURESCENCE CONCERNING CRT'S?	13.0	13.9	24.6	19.9	5.6	20.4	7.0	30.3	13.4	16.1	
J 609	J2-14	DO YOU USE OR REFER TO PHOSPHORESCENCE CONCERNING CRT'S?	15.4	18.0	27.8	22.8	7.7	20.4	7.0	31.0	14.0	17.2	
J 610	J2-15	DO YOU USE OR REFER TO SHADOW MASK CONCERNING CRT'S?	7.3	7.4	14.3	12.5	2.8	10.6	4.7	10.6	7.3	8.0	
J 611	J3-1	DO YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM K1-1; IF YES, CONTINUE.	59.3	60.7	64.3	23.5	79.7	75.4	58.1	69.0	36.6	75.9	
J 612	J3-2	DO YOU PERFORM TASKS ON FREQUENCY CONVERTER SYSTEMS STAGES?	55.3	36.9	56.3	5.1	55.2	47.2	30.2	41.5	16.5	57.5	

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TITLES

3-3 DO YOU PERFORM TASKS ON FREQUENCY MIXER SYSTEMS
57A6ES7

3-4 DO YOU PERFORM TASKS ON MODERN SYSTEMS STAGES?

11-5 DO YOU USE OR REFER TO THE METERDYNING OF SIGNALS IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS?

3-6 DO YOU PERFORM TASKS ON REACTANCE MODULA

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STAGE 3-7 DO YOU PERFORM TASKS ON MODULATED OSCILLATOR SYSTEM STAGES?

4 SYSTEMS (K1), FM SYSTEMS (K2), NUMBERING SYSTEMS (K3)

1-1 DO YOU WORK ON AN TRANSMIT OR RECEIVE SYSTEMS IN YOUR
PRESENT JOB? IF NO, GO TO ITEM K2-1; IF YES, CONTINUE.

1-2 DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS?

DO YOU WANT TO TRANSMIT OR RECEIVE SYSTEMS?

1-3 DO YOU CLEAN AN TRANSMIT OR RECEIVE SYSTEMS?
1-4 DO YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS?
1-5 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS?

1-6 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE

100 100 COMPONENTS?

1-7 DO YOU REMOVE OR REPLACE AN TRANSMIT OR RECEIVE SYSTEMS?

1-8 00 YOU

COMPONENTS?

1-800-DO-YOU-1

1-10 DO YOU PERFORM TASKS ON RE AMPLIFIERS?

1-877-DO YOU PERFORM TASKS ON AVERAGE?

1-11 00 YOU PERFORM TASKS ON POWER AMPLIFIERS?

1-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS?

1-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS?

[illegible]

5.3 45.9 57.1 3.7 55.9 52.1 37.2 42.3 20.0 63.2

Year	1970	1971	1972	1973	1974	1975
8.0	5.7	22.2	19.9	34.3	7.0	4.7
22.5	3.7	64.4				

	20	30	40	50	60	70	80	90	100
2.0	45.1	40.4	9.6	58.7	52.0	32.6	39.4	14.6	50.6

	7	21	37	51	63	70	80	90	100
50	11	5	25	4					
60	11	5	25	4					
70	11	5	25	4					
80	11	5	25	4					
90	11	5	25	4					
100	11	5	25	4					

Year	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020
Population (millions)	55.0	11.5	25.4	61	21.0	25.4	2.5	4.2	4.9	20.7					

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
3.9	30.3	35.7	5.1	35.0	44.4	14.0	24.6	14.0	43.7																																																																																																						

3.6	43.4	50.7	1.5	43.2	50.7	11.6	43.0	5.5	72.4
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8.7	93.4	52.5	7.82,2	40.6	7.0	91.5	9.3	70.1
1.0	14.1	67.4	0	47.1	10.4	2.3	36.6	3.0

[illegible]

9.5	43.4	51.6	.7	79.0	48.6	9.3	39.4	3.0	69.0
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7.1	43.4	52.4	.7	67.1	41.5	7.0	34.5	-2.4	65.5
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7.1	39.3	46.8	.7	79.0	47.9	9.3	39.4	3.7	66.7
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[illegible]

5.4	40.2	49.2	7	67.1	40.0	4.7	33.0	2.4	63.2
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9-7 41.9 53.2 0 59.7 17.3 0.3 12.1 1.0 62.3

8.7	41.8	33.2	.0	58.7	37.3	9.3	35.1	3.0
8.7	41.8	54.0	.0	60.1	38.7	11.6	36.6	3.0
8.7	41.8	54.0	.0	60.1	38.7	11.6	36.6	3.0
8.7	41.8	54.0	.0	60.1	38.7	11.6	36.6	3.0

[illegible]

	9.5	41.0	51.6	.0	61.5	37.3	11.6	31.0	3.0	58.6
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NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSK TITLES

K 631	M1-14	DO YOU PERFORM TASKS ON IF AMPLIFIERS?	304	304	304	305	328	328	328	328	328	328	328	328
			70	71	74	74	70	71	72	73	74	75	76	77
			(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
K 632	M1-15	DO YOU PERFORM TASKS ON DETECTORS?	18.7	41.8	54.0	.0	60.1	38.7	14.0	34.5	3.0	52.9		
K 633	M1-16	DO YOU PERFORM TASKS ON MIXER AMPLIFIERS?	19.5	41.0	51.6	.7	58.7	38.7	14.0	33.8	3.0	49.4		
K 634	M1-17	DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN TRANSMITTERS?	18.7	37.7	50.8	.0	59.4	38.0	14.0	31.7	3.0	51.7		
			13.8	33.6	34.1	.7	50.3	22.5	4.7	19.0	1.8	41.4		
K 635	M1-18	DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN TRANSMITTERS?	18.7	40.2	44.4	.7	61.5	31.0	11.6	22.5	12.4	56.3		
K 636	M1-19	DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS?	21.1	42.6	59.5	.7	74.8	47.2	14.0	40.8	2.4	66.7		
K 637	M1-20	DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS?	20.3	38.5	54.8	.0	70.6	44.4	14.0	36.6	3.0	62.1		
K 638	M2-1	DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM K3-1; IF YES, CONTINUE.	57.7	37.7	30.2	3.7	46.2	52.1	23.3	50.0	20.1	78.2		
K 639	M2-2	DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS?	54.5	36.1	28.6	2.9	42.7	48.6	16.3	48.6	19.5	75.9		
K 640	M2-3	DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS?	46.3	29.5	23.0	2.2	33.6	41.5	2.3	39.4	15.9	57.5		
K 641	M2-4	DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS?	53.7	36.9	23.0	2.2	32.2	45.1	9.3	38.0	14.6	73.6		
K 642	M2-5	DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE SYSTEMS?	52.0	35.2	23.8	2.2	39.9	48.6	16.3	42.3	17.7	72.4		
K 643	M2-6	DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE COMPONENTS?	48.0	35.2	23.8	2.2	30.1	43.0	9.3	35.9	15.2	71.3		
K 644	M2-7	DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE SYSTEMS?	43.1	32.8	23.0	1.5	37.8	48.6	16.3	40.8	17.1	70.1		
K 645	M2-8	DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE COMPONENTS?	42.0	32.0	22.2	2.2	29.4	43.0	4.7	35.2	15.2	69.0		
K 646	M2-9	DO YOU PERFORM LINK PERFORMANCE ASSESSMENTS?	50.4	9.8	9.5	1.5	14.7	12.0	4.7	14.1	4.9	62.1		
K 647	M2-10	DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS?	49.6	33.6	23.8	2.2	24.5	38.0	.0	25.4	15.2	52.9		
K 648	M2-11	DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS?	50.4	35.2	22.2	2.2	24.5	38.0	16.3	23.9	11.0	59.0		
K 649	M2-12	DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)?	43.1	35.2	22.2	2.2	24.5	38.7	18.6	28.2	12.8	60.9		
K 650	M2-13	DO YOU PERFORM TASKS ON POWER AMPLIFIERS?	43.9	36.9	21.4	1.5	25.2	38.7	18.6	27.5	14.0	64.4		
K 651	M2-14	DO YOU PERFORM TASKS ON RF AMPLIFIERS?	49.6	36.1	25.4	.7	25.2	41.5	16.3	35.2	14.6	60.9		
K 652	M2-15	DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS?	48.8	28.7	23.0	2.2	24.5	37.3	14.0	26.8	11.6	51.7		
K 653	M2-16	DO YOU PERFORM TASKS ON IF AMPLIFIERS?	50.4	34.4	23.8	.7	25.2	41.5	16.3	30.3	15.9	57.5		

KESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D	TSK	TITLES	304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
M 676	K3-17	DO YOU SUBTRACT OCTAL NUMBERS?	8.9	11.5	11.1	46.3	7.0	19.0	62.8	29.6	32.3	24.1
M 677	K3-18	DO YOU ADD HEXADECIMAL NUMBERS?	5.7	8.2	9.5	40.4	3.5	9.9	14.0	19.7	9.8	14.9
M 678	K3-19	DO YOU SUBTRACT HEXADECIMAL NUMBERS?	5.7	8.2	8.7	39.0	3.5	9.9	14.0	19.0	9.8	14.9
M 679	K3-20	DO YOU DIVIDE BINARY NUMBERS?	9.8	18.9	19.8	30.9	8.4	15.5	30.2	21.8	23.2	21.8
M 680	K3-21	DO YOU MULTIPLY BINARY NUMBERS?	9.8	19.7	22.2	30.9	9.1	16.9	30.2	21.1	24.4	21.8
M 681	K3-22	DO YOU USE OR REFER TO BINARY CODED DECIMAL (BCD)?	19.5	27.9	33.3	46.3	23.8	29.6	51.2	41.5	29.3	41.4
M 682	K3-23	DO YOU USE OR REFER TO GRAY CODE?	2.4	4.1	9.5	30.1	2.8	13.9	34.9	18.3	3.7	8.0
M 683	K3-24	DO YOU USE OR REFER TO ICAO CODE?	1.6	8.2	4.0	2.2	2.1	3.5	.0	4.9	3.7	4.6
M 684	K3-25	DO YOU USE OR REFER TO EXCESS-3 CODE?	1.6	4.1	4.8	7.4	5.6	9.2	9.3	14.1	17.1	10.3

LOGIC FUNCTIONS (L1), BOOLEAN EQUATIONS (L2), COUNTERS (L3)

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM TITLES

L 693	L1-9	DO YOU USE OR REFER TO TRUTH TABLES FOR 'EXCLUSIVE OR' LOGIC SYMBOLS?	17.9	50.8	29.4	45.6	14.7	24.6	46.5	38.0	22.0	36.8
L 694	L1-10	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'AND' GATES?	26.0	57.4	38.1	66.9	18.9	40.8	60.5	45.8	26.8	47.1
L 695	L1-11	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'OR' GATES?	26.0	57.4	38.1	66.9	18.9	41.5	60.5	45.8	26.8	47.1
L 696	L1-12	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'NAND' OR 'NOR' GATES?	26.0	57.4	38.1	65.4	18.9	41.5	60.5	45.8	26.2	47.1
L 697	L1-13	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'EXCLUSIVE OR' GATES?	24.4	55.7	35.7	63.2	18.9	35.9	60.5	44.4	25.6	47.1
L 698	L1-14	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR INHIBITED 'AND' GATES?	23.6	49.2	31.7	49.3	16.8	41.5	44.2	39.4	21.3	46.0
L 699	L1-15	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'B' BARS?	4.1	6.6	6.3	5.9	.7	4.2	.0	7.0	4.9	4.6
L 700	L1-16	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'M' BARS?	4.1	5.7	5.6	5.1	.7	4.2	.0	7.0	4.9	4.6
L 701	L1-17	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR COMBINERS?	13.8	17.2	11.9	11.8	3.5	9.9	14.0	16.9	6.7	25.3
L 702	L1-18	DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOL?	26.0	53.3	35.7	62.5	18.2	40.1	37.2	39.4	23.2	41.4
L 703	L1-19	DO YOU USE OR REFER TO ONE-SHOT MULTIVIBRATOR SYMBOL?	23.6	54.1	35.7	60.3	16.1	39.4	34.9	36.6	21.3	39.1
L 704	L1-20	DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT OR SCHEMATIC DIAGRAM?	25.2	55.7	36.5	61.0	18.2	40.8	32.6	38.7	24.4	40.2
L 705	L1-21	DO YOU USE OR REFER TO ONE-SHOT CIRCUIT OR SCHEMATIC DIAGRAM?	22.8	54.9	36.5	54.4	15.4	38.7	32.6	35.2	21.3	39.1
L 706	L1-22	DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES?	15.4	48.4	30.2	45.6	13.3	23.9	34.9	35.9	20.7	31.0
L 707	L1-23	DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOL?	14.6	35.2	25.4	43.4	11.9	27.5	30.2	28.9	20.1	26.4
L 708	L1-24	DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOL?	14.6	35.2	24.6	41.2	11.2	27.5	30.2	28.9	20.7	25.3
L 709	L1-25	DO YOU USE OR REFER TO NONCOMPLEMENTED FLIP-FLOP LOGIC SYMBOL?	12.2	28.7	19.8	40.4	9.8	21.8	27.9	25.4	17.7	23.0
L 710	L1-26	DO YOU CONSTRUCT TRUTH TABLES FOR 'B' BARS?	2.4	3.3	4.0	.7	.7	5.6	.0	2.8	1.8	3.4
L 711	L1-27	DO YOU CONSTRUCT TRUTH TABLES FOR 'M' BARS?	2.4	3.3	4.0	.0	.7	4.9	.0	2.1	1.8	2.3
L 712	L1-28	DO YOU CONSTRUCT TRUTH TABLES FOR COMBINERS?	4.9	6.6	5.6	3.7	.7	6.3	4.7	6.3	3.7	8.0

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D TSM	TITLES	304 (M)	304 71 (M)	304 74 (M)	305 74 (M)	320 70 (M)	320 71 (M)	320 72 (M)	320 73 (M)	320 74 (M)	320 75 (M)
L 713	L1-29 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS?	22.0	49.2	30.2	51.5	14.7	33.1	27.9	34.5	18.9	34.5
L 714	L1-30 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS?	13.0	32.0	26.2	37.5	10.5	29.6	30.2	28.2	18.3	25.3
L 715	L1-31 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS?	13.8	29.5	24.6	36.0	11.2	29.6	30.2	28.2	18.9	26.4
L 716	L1-32 DO YOU TRACE DATA FLOW THROUGH NONCOMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS?	13.0	26.2	24.6	36.0	9.1	28.2	27.9	25.4	16.5	24.1
L 717	L1-33 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS?	10.6	21.3	19.0	27.9	5.6	12.7	27.9	24.6	9.8	21.8
L 718	L2-1 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS? IF NO, GO TO ITEM L3-1; IF YES, CONTINUE.	17.1	27.9	23.8	39.7	12.6	28.2	27.9	31.7	15.9	27.6
L 719	L2-2 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS?	7.3	12.3	7.9	11.0	4.9	9.2	7.0	9.2	7.9	11.5
L 720	L2-3 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS?	3.3	7.4	5.6	5.9	2.1	7.7	4.7	8.5	4.9	6.9
L 721	L2-4 DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS?	8.1	9.0	9.5	18.4	4.2	15.5	16.3	11.3	10.4	16.1
L 722	L2-5 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES?	13.0	24.6	18.3	36.0	9.1	21.8	23.3	26.8	18.5	27.6
L 723	L2-6 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS?	6.5	10.7	13.5	25.0	7.0	14.1	20.9	16.9	11.6	17.2
L 724	L2-7 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA?	6.5	10.7	11.9	23.5	7.7	15.5	18.6	16.9	11.6	17.2
L 725	L2-8 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES?	10.6	21.3	9.5	19.1	7.0	16.2	9.3	18.3	11.6	14.9
L 726	L2-9 DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS?	4.9	9.8	5.6	6.6	3.5	7.7	4.7	12.0	6.1	5.7
L 727	L2-10 DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE?	15.4	27.0	19.0	38.2	10.5	22.5	27.9	26.8	14.0	25.3
L 728	L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS?	8.1	10.7	8.7	19.9	5.6	10.6	18.6	13.4	11.0	14.9

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TITLES

L 729 L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS?

L 730 L3-1 DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB?
IF NO, GO TO ITEM MI-1; IF YES, CONTINUE.

L 731 L3-2 DO YOU USE OR REFER TO UP-COUNTERS?
L 732 L3-3 DO YOU USE OR REFER TO DOWN-COUNTERS?

L 733 L3-4 DO YOU USE OR REFER TO SERIAL COUNTERS
L 734 L3-5 DO YOU USE OR REFER TO PARALLEL COUNTERS

L 735 L3-6 DO YOU USE OR REFER TO RING COUNTERS?

L 737 L3-8 DO YOU USE OR REFER TO COUNT DETECT

L 739 L3-10 DO YOU USE OR REFER TO OTHER MODULES?

UP-COUNTERS?
L 742 L3-13 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF

L 743 L3-14 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF
DOWN-COUNTERS?

L 744 L3-15 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DOWN COUNTERS?

DECADE COUNTERS?

1. 746 L3-17 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF COUNTERS?

L 747 L3-18 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF COUNTERS FEEDING STORAGE REGISTERS?

L 748 L3-19 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF
SHIFT REGISTERS?
CIRCUIT TYPE OF COUNTERS?

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304	304	305	328	328	328	328	328
70	71	74	70	71	72	73	74
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)

1.4	11.5	12.7	23.5	7.0	14.1	23.3	17.6	11.0	16.1
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8.7	48.4	31.0	55.1	16.8	38.7	48.8	38.7	23.7	43.7
9.5	45.1	30.2	51.5	17.5	36.6	48.8	37.3	22.6	40.2

8.7	36.9	31.0	51.5	18.9	35.2	46.5	38.0	22.6	39.1
7.9	31.1	27.0	47.8	17.5	20.2	39.5	33.1	20.1	36.0

1.4	27.0	17.5	33.8	9.1	13.9	20.9	24.6	17.2
1.5	46.7	16.7	28.7	12.6	18.3	34.9	31.0	18.4
2.0	38.5	25.4	42.6	8.6	22.5	24.0	31.0	15.0
2.5	38.5	25.4	42.6	8.6	22.5	24.0	31.0	15.0

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1970	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100

[illegible]

	6.3	39.3	23.8	47.8	11.2	31.0	34.9	32.4	16.5	35.6
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3.8	30.3	23.0	40.4	9.8	25.4	34.9	31.0	15.2	34.5
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3.8	41.0	16.7	26.5	10.5	16.2	27.9	27.5	14.0	24.1
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9.8	20.5	15.1	32.4	7.7	12.0	20.9	23.9	0.5	16.1
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4.6	24.6	20.6	44.9	11.2	18.3	34.9	27.5	16.5	33.3
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5.4	24.6	23.8	51.5	11.2	22.5	39.5	30.3	16.5	36.8
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	8.9	23.8	15.1	37.5	7.7	14.1	27.9	22.5	14.6	21.8
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NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSK TITLES

L 749 L3-20 DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF
DECADE COUNTERS?
L 750 L3-21 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING
COUNTERS FOR SPECIFIC INPUT PULSES?
L 751 L3-22 DO YOU DETERMINE THE APPROPRIATE 'AND' GATE NECESSARY
IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT?

304	304	305	328	328	328	328	328	328	328
70	71	74	70	71	72	73	74	75	75
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)

4.9	13.9	10.3	10.3	4.9	6.3	14.0	9.9	4.9	13.8
7.3	17.2	15.1	23.5	7.0	12.0	14.0	19.7	8.5	16.1
9.8	28.7	22.2	35.3	7.7	18.3	32.6	21.8	11.0	26.4

M TIMING CIRCUITS (M1), USE OF SIGNAL GENERATORS (M2), MOTORS
AND GENERATORS (M3)

M 752 M1-1 DO YOU WORK WITH SAWTOOTH WAVE GENERATOR TIMING
CIRCUITS?

24.4	42.6	33.3	20.6	26.6	55.6	14.0	47.2	18.9	36.8
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M 753 M1-2 DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATOR TIMING
CIRCUITS?

14.6	28.7	13.5	9.6	15.4	51.4	7.0	26.1	8.5	14.9
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M 754 M1-3 DO YOU WORK WITH PULSED OSCILLATOR TIMING CIRCUITS?
M 755 M1-4 DO YOU WORK WITH BLOCKING OSCILLATOR TIMING CIRCUITS?

21.1	43.4	22.2	24.3	20.3	54.9	27.9	42.3	17.1	35.6
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M 756 M1-5 DO YOU WORK WITH MASTER SLATION TIMING CIRCUITS?
M 757 M1-6 DO YOU USE OR REFER TO RISE TIME?

19.5	39.3	17.5	16.2	20.3	58.5	9.3	30.3	16.5	19.5
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M 758 M1-7 DO YOU USE OR REFER TO FALL OR FLYBACK TIME?

22.8	21.3	20.6	31.6	11.9	26.8	14.0	16.2	9.8	25.3
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M 759 M1-8 DO YOU USE OR REFER TO SWEEP TIME?

26.0	63.1	41.3	58.1	17.5	59.9	37.2	47.2	21.3	44.8
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M 760 M1-9 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH
WAVEFORMS?

24.4	56.6	33.3	47.1	16.8	50.0	32.6	45.8	19.5	35.6
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M 761 M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH
WAVEFORMS?

33.3	55.7	40.5	44.9	18.2	59.9	25.6	56.3	29.9	42.5
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M 762 M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH
WAVEFORMS?

19.5	31.1	25.4	14.7	16.1	57.7	11.6	33.8	16.5	28.7
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M 763 M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH
WAVEFORMS?

17.9	27.9	22.2	15.4	14.0	54.9	7.0	35.9	17.7	21.8
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19.5	29.5	20.6	14.7	11.9	46.5	14.0	31.7	14.0	21.8
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19.5	31.1	20.6	14.0	11.2	50.0	11.6	26.1	16.5	20.7
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O YSK TITLES

M 764 M2-1 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M3-1; IF YES, CONTINUE.

M 765 M2-2 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS?

M 766 M2-3 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS?

M 767 M2-4 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS?

M 768 M2-5 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS?

M 769 M2-6 DO YOU USE AUDIO SINE-WAVE GENERATORS?

M 770 M2-7 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE?

M 771 M2-8 DO YOU USE RF GENERATORS LESS THAN 1,000 MHZ?

M 772 M2-9 DO YOU USE RF GENERATORS GREATER THAN 1,000 MHZ?

M 773 M2-10 DO YOU USE WHITE NOISE GENERATORS?

M 774 M2-11 DO YOU USE PATTERN GENERATORS?

M 775 M2-12 DO YOU USE PSEUDO-RANDOM GENERATORS?

M 776 M2-13 DO YOU USE TIME MARK GENERATORS?

M 777 M2-14 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION GENERATORS?

M 778 M3-1 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS,

GENERATORS (SERVO), OR ALTERNATORS? IF NO, GO TO ITEM M1-1; IF YES, CONTINUE.

M 779 M3-2 DO YOU INSPECT MOTORS?

M 780 M3-3 DO YOU CLEAN OR LUBRICATE MOTORS?

M 781 M3-4 DO YOU OPERATE MOTORS?

M 782 M3-5 DO YOU REMOVE OR REPLACE COMPLETE MOTORS?

M 783 M3-6 DO YOU REMOVE OR REPLACE MOTOR PARTS?

304	304	304	305	328	328	328	328	328	328
70	71	74	74	70	71	72	73	74	75
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)

61.0	63.9	62.7	36.8	72.0	64.1	32.6	66.2	45.1	72.4
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61.0	62.3	64.3	31.6	70.6	62.7	30.2	64.0	43.3	71.3
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48.0	50.0	50.8	27.9	58.0	47.9	23.3	40.6	30.5	59.0
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43.1	43.4	48.4	24.3	58.0	43.7	25.6	45.8	31.7	50.6
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36.6	31.1	43.7	23.5	47.6	38.0	9.3	31.0	17.1	34.5
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59.3	47.5	59.5	21.3	68.5	47.9	4.7	31.0	38.4	70.1
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35.0	31.1	31.0	14.7	26.6	38.7	4.7	35.9	15.2	51.7
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49.6	50.0	58.7	8.8	67.1	50.0	11.6	47.9	18.3	64.4
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52.0	50.0	27.0	5.9	28.0	53.5	30.2	43.4	17.7	34.5
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35.8	9.8	11.1	6.6	1.4	2.8	.0	17.6	6.1	20.7
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22.8	9.8	14.3	13.2	3.5	12.7	2.3	14.8	.6	25.3
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10.6	9.8	7.9	2.2	1.4	2.8	2.3	9.2	.6	21.8
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17.1	44.3	10.3	5.9	2.8	29.6	4.7	20.4	2.4	25.3
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30.1	43.4	24.6	12.5	15.4	42.3	11.6	45.1	17.7	32.2
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26.0	53.3	36.5	36.8	32.2	48.6	11.6	31.7	45.1	42.5
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23.6	52.5	34.1	33.8	29.4	45.8	9.3	28.2	37.8	43.7
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22.0	44.3	32.5	32.4	26.6	34.5	4.7	23.2	21.3	31.0
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23.6	43.4	30.2	28.7	28.0	39.4	11.6	23.9	30.5	34.5
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22.0	48.4	34.1	31.6	30.1	40.1	4.7	25.4	36.0	36.8
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15.4	23.0	25.4	25.7	12.6	12.7	.0	9.9	4.9	9.2
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KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
M 784	M3-7 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIPE CONNECTIONS OF MOTORS?	22.2	50.0	33.3	33.8	31.5	40.1	4.7	26.1	37.2	37.9
M 785	M3-8 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS?	14.6	14.8	18.3	20.6	7.0	9.9	.0	9.2	6.1	6.9
M 786	M3-9 DO YOU PERFORM TASKS ON MOTOR FIELD COILS?	9.8	8.2	7.9	4.4	2.1	4.9	.0	2.1	2.4	2.3
M 787	M3-10 DO YOU PERFORM ANY TASKS ON MOTOR ARMATURES?	11.4	10.7	12.7	8.8	4.2	5.6	.0	4.2	2.4	2.4
M 788	M3-11 DO YOU PERFORM ANY TASKS ON MOTOR ROTORS?	8.9	10.7	10.3	8.8	3.5	4.9	.0	5.6	3.0	2.3
M 789	M3-12 DO YOU PERFORM ANY TASKS ON MOTOR BRUSHES?	14.6	17.2	18.3	22.1	10.5	8.5	2.3	9.9	2.4	8.0
M 790	M3-13 DO YOU PERFORM ANY TASKS ON MOTOR SLIP RINGS?	8.1	8.2	12.7	10.3	4.2	8.5	2.3	6.3	3.0	3.4
M 791	M3-14 DO YOU PERFORM ANY TASKS ON MOTOR COMMUTATORS?	8.1	9.8	11.9	9.6	4.9	6.3	.0	4.9	1.2	2.3
M 792	M3-15 DO YOU PERFORM ANY TASKS ON MOTOR POLE PIECES?	5.7	7.4	7.9	4.4	2.1	4.2	.0	2.8	1.2	2.3
M 793	M3-16 DO YOU DETERMINE OR MEASURE FORCE OR TORQUE CREATED BY A MOTOR?	1.6	3.3	11.1	2.2	4.9	11.3	.0	4.9	3.0	2.3
M 794	M3-17 DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR?	2.4	14.8	13.5	5.1	5.6	17.6	.0	6.3	7.3	3.4
M 795	M3-18 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS?	1.6	9.0	5.6	3.7	2.1	9.2	2.3	4.9	3.7	1.1
M 796	M3-19 DO YOU WORK WITH SYNCHRONOUS MOTORS?	11.4	26.2	25.4	14.7	17.5	37.3	7.0	14.8	26.8	19.5
M 797	M3-20 DO YOU WORK WITH INDUCTION MOTORS?	13.8	28.7	22.2	18.4	12.6	33.8	4.7	15.5	12.8	16.1
M 798	M3-21 DO YOU WORK WITH SPLIT-PHASE MOTORS?	9.8	22.1	12.7	8.8	7.0	24.6	4.7	7.7	6.7	14.9
M 799	M3-22 DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS?	13.8	25.4	18.3	15.4	14.7	31.0	4.7	13.4	15.2	20.7
M 800	M3-23 DO YOU WORK WITH SERVOS OR SYNCHROS MOTORS?	12.2	23.0	27.0	19.1	23.8	46.5	9.3	14.8	40.2	34.5
M 801	M3-24 DO YOU WORK WITH SHADED-POLE MOTORS?	4.1	3.3	5.6	5.9	1.4	5.6	2.3	4.2	1.8	2.3
M 802	M3-25 DO YOU INSPECT GENERATORS OR ALTERNATORS?	9.8	21.3	14.3	11.8	5.6	13.4	2.3	7.7	9.8	3.4
M 803	M3-26 DO YOU CLEAN OR LUBRICATE GENERATORS OR ALTERNATORS?	7.3	10.7	11.1	11.8	4.2	7.7	.0	2.8	6.1	3.4
M 804	M3-27 DO YOU OPERATE GENERATORS OR ALTERNATORS?	11.4	22.1	14.3	9.6	6.3	11.3	2.3	8.5	7.3	5.7
M 805	M3-28 DO YOU REMOVE OR REPLACE COMPLETE GENERATORS OR ALTERNATORS?	6.5	7.4	11.9	4.4	3.5	7.0	.0	2.8	7.9	1.1
M 806	M3-29 DO YOU REMOVE OR REPLACE GENERATOR, ALTERNATOR, OR PARTS?	5.7	5.7	7.1	5.9	1.4	3.5	.0	.7	.6	2.3

KESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLES											
	304	304	304	305	328	328	328	328	328	328	328	328
M 007 M3-30 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS OR ALTERNATORS?	70	71	74	74	70	71	72	73	74	75		
M 008 M3-31 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS OR ALTERNATORS?	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)
	8.9	15.6	11.9	8.1	5.6	9.2	2.3	4.2	10.4	2.3		
	5.7	2.5	4.8	4.4	2.1	2.1	.0	.7	1.2	1.1		

M METER MOVEMENTS (M1), SATURABLE REACTORS AND MAGNETIC AMPLIFIERS (M2), WAVESHAPING CIRCUITS (M3)

M 009 M1-1 DO YOU WORK WITH METERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M2-1; IF YES, CONTINUE.

M 010 M1-2 DO YOU CONSIDER THE FUNCTIONS OF PERMANENT MAGNET INTERNAL METER PARTS?

M 011 M1-3 DO YOU CONSIDER THE FUNCTIONS OF MOVING COIL INTERNAL METER PARTS?

M 012 M1-4 DO YOU CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS INTERNAL METER PARTS?

M 013 M1-5 DO YOU READ METER SCALES?

M 014 M1-6 DO YOU EXTEND THE RANGE OF AMMETERS?

M 015 M1-7 DO YOU EXTEND THE RANGE OF VOLTMETERS?

M 016 M1-8 DO YOU ZERO OHMMETERS?

M 017 M1-9 DO YOU ZERO AMMETERS?

M 018 M1-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLT)?

M 019 M1-11 DO YOU CONSIDER BALLASTIC RESPONSE OF METER MOVEMENTS?

M 020 M1-12 DO YOU CONSIDER OTHER METER MOVEMENTS?

M 021 M2-1 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M3-1; IF YES, CONTINUE.

M 009 M1-1 DO YOU WORK WITH METERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M2-1; IF YES, CONTINUE.	64.2	68.9	63.5	56.6	81.6	76.1	60.5	66.9	74.4	75.9		
M 010 M1-2 DO YOU CONSIDER THE FUNCTIONS OF PERMANENT MAGNET INTERNAL METER PARTS?	21.1	31.6	22.2	10.3	18.2	27.5	9.3	15.5	14.0	18.4		
M 011 M1-3 DO YOU CONSIDER THE FUNCTIONS OF MOVING COIL INTERNAL METER PARTS?	22.8	34.4	25.4	14.7	23.8	31.7	11.6	21.1	20.7	23.0		
M 012 M1-4 DO YOU CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS INTERNAL METER PARTS?	17.9	23.8	20.6	13.2	17.5	21.8	7.0	18.3	12.8	12.6		
M 013 M1-5 DO YOU READ METER SCALES?	65.9	72.1	64.3	52.9	81.1	75.4	58.1	66.9	72.0	75.9		
M 014 M1-6 DO YOU EXTEND THE RANGE OF AMMETERS?	22.8	31.1	31.0	15.4	28.7	32.4	11.6	25.4	22.0	27.6		
M 015 M1-7 DO YOU EXTEND THE RANGE OF VOLTMETERS?	35.8	39.3	40.5	19.1	41.3	44.4	18.6	35.9	33.5	31.0		
M 016 M1-8 DO YOU ZERO OHMMETERS?	65.0	67.2	62.7	52.2	80.4	76.1	55.8	66.2	73.8	73.6		
M 017 M1-9 DO YOU ZERO AMMETERS?	32.5	41.0	38.1	25.0	42.0	52.1	14.0	38.0	24.4	40.2		
M 018 M1-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLT)?	40.7	50.8	50.8	22.8	48.3	52.1	23.3	42.3	46.3	47.1		
M 019 M1-11 DO YOU CONSIDER BALLASTIC RESPONSE OF METER MOVEMENTS?	8.9	7.4	11.9	5.1	5.6	9.2	2.3	3.5	6.7	8.0		
M 020 M1-12 DO YOU CONSIDER OTHER METER MOVEMENTS?	25.2	27.0	26.2	13.2	16.8	22.5	11.6	19.0	19.5	23.0		
M 021 M2-1 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M3-1; IF YES, CONTINUE.	10.6	33.6	11.1	8.1	7.7	14.8	4.7	12.7	6.1	4.6		

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D TSK	TITLES	304	304	304	305	328	328	328	328	328	328	328	328	328	328	328	328	328
M 022	N2-2 DO YOU INSPECT SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?	6.5	32.0	7.9	6.6	5.6	9.2	2.3	10.6	4.9	1.1							
M 023	N2-3 DO YOU CLEAN SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?	4.9	27.9	6.3	4.4	4.9	7.0	.0	6.3	3.7	1.1							
M 024	N2-4 DO YOU ADJUST SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?	4.1	23.8	6.3	2.2	4.2	5.6	2.3	4.9	3.7	.0							
M 025	N2-5 DO YOU TROUBLESHOOT SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?	5.7	29.5	7.9	5.9	7.0	9.9	4.7	8.5	4.3	1.1							
M 026	N2-6 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS?	6.5	27.9	7.1	6.6	5.6	9.9	2.3	8.5	4.9	1.1							
M 027	N2-7 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS?	2.4	16.4	4.0	3.7	4.2	7.0	.0	3.5	1.2	.0							
M 028	N2-8 DO YOU USE OR REFER TO MYSTERIOUS CURVES OR LOOPS?	1.6	9.8	4.0	2.2	1.4	2.8	2.3	6.3	3.0	2.3							
M 029	N2-9 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SATURABLE REACTORS?	2.4	16.4	7.1	2.2	3.5	8.5	2.3	7.7	1.8	1.1							
M 030	N2-10 DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SATURABLE REACTORS?	3.3	15.6	5.6	5.9	2.8	7.7	.0	9.2	1.8	1.1							
M 031	N2-11 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS FOR MAGNETIC AMPLIFIERS?	4.1	13.9	5.6	2.2	2.1	7.0	.0	6.3	1.8	1.1							
M 032	N2-12 DO YOU USE OR REFER TO SATURABLE REACTOR SCHEMATIC SYMBOLS?	8.1	24.6	10.3	5.9	4.9	10.6	4.7	11.3	4.9	1.1							
M 033	N3-1 DO YOU WORK WITH WAVESHAPING CIRCUITS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 01-1; IF YES, CONTINUE.	30.9	62.3	28.6	38.2	11.9	54.9	58.1	47.2	26.8	26.8							
M 034	N3-2 DO YOU USE OR REFER TO TRANSIENT INTERVALS (RISE TIME AND FALL TIME)?	21.1	59.0	23.8	30.9	9.1	43.0	34.9	35.9	17.7	20.7							
M 035	N3-3 DO YOU USE OR REFER TO PULSE WIDTH (PW)?	26.0	61.5	23.8	36.8	10.5	54.9	55.8	46.5	23.2	24.1							
M 036	N3-4 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)?	19.5	53.3	20.6	36.0	9.1	51.4	58.1	46.5	21.3	19.5							
M 037	N3-5 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)?	20.3	54.1	23.0	33.8	9.1	54.9	58.1	46.5	23.2	18.4							
M 038	N3-6 DO YOU USE OR REFER TO DIFFERENTIATING CIRCUITS?	27.6	50.8	25.4	29.4	9.8	45.1	16.3	32.4	16.5	21.8							

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D TSK	TITLES	304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
M 839	N3-7 DO YOU USE OR REFER TO INTEGRATING CIRCUITS?										
M 840	N3-8 DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT?	26.8	52.5	23.0	29.4	9.8	43.0	25.6	35.2	20.1	20.7
		17.9	39.3	22.2	18.4	5.6	40.8	9.3	23.9	9.1	14.9
M 841	N3-9 DO YOU DETERMINE WHETHER AN LR OR RC CIRCUIT IS DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT AND OUTPUT CONFIGURATION?	11.4	31.1	16.7	9.6	3.5	27.5	9.3	14.1	7.3	9.2
M 842	N3-10 DO YOU WORK WITH SQUARE WAVE GENERATOR SOLID STATE CIRCUITS?	22.0	48.4	22.2	26.5	10.5	50.0	18.6	38.7	18.3	26.8
M 843	N3-11 DO YOU WORK WITH RECTANGULAR WAVE GENERATOR SOLID STATE CIRCUITS?	17.1	34.4	11.9	13.2	6.3	38.7	9.3	28.9	9.1	16.1
M 844	N3-12 DO YOU WORK WITH TRIANGULAR (SAWTOOTH) WAVE GENERATOR SOLID STATE CIRCUITS?	18.7	35.2	16.7	12.5	6.3	44.4	11.6	34.5	10.4	21.8
M 845	N3-13 DO YOU WORK WITH RAMP (TRAPEZOIDAL) GENERATOR SOLID STATE CIRCUITS?	8.1	28.7	9.5	8.8	5.6	43.0	4.7	29.6	7.3	8.0
M 846	N3-14 DO YOU WORK WITH FUNCTION GENERATOR SOLID STATE CIRCUITS?	15.4	26.2	17.5	12.5	5.6	20.4	7.0	30.3	10.4	20.7
M 847	N3-15 DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS?	17.9	52.5	18.3	21.3	7.7	43.7	16.3	27.5	15.2	19.5
M 848	N3-16 DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING CIRCUITS?	17.9	50.8	19.8	21.3	5.6	45.1	14.0	30.3	12.2	20.7
M 849	N3-17 DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS?	12.2	38.5	15.1	14.0	2.8	34.5	11.6	23.2	9.8	13.8
M 850	N3-18 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS?	15.4	50.0	19.0	20.6	7.0	43.0	25.6	28.1	15.2	14.9
M 851	N3-19 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS?	15.4	48.4	19.0	22.8	5.6	39.4	7.0	19.0	8.5	14.9
M 852	N3-20 DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS?	16.3	43.4	16.7	22.1	7.0	42.3	16.3	25.4	13.4	16.1
M 853	N3-21 DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS?	13.8	45.1	16.7	21.3	4.9	37.3	7.0	17.6	9.1	16.1

D TSK	TITLES	304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	320 70 (M)	320 71 (M)	320 72 (M)	320 73 (M)	320 74 (M)	320 75 (M)
0 877	01-24 DO YOU USE OR REFER TO PEAK POWER WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?	14.6	12.3	30.9	.7	52.4	6.3	2.3	8.5	1.8	14.9
0 878	01-25 DO YOU USE OR REFER TO FREQUENCY STABILITY WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?	15.4	12.3	43.7	.7	60.8	6.3	2.3	7.0	1.8	23.0
0 879	01-26 DO YOU USE OR REFER TO RESPONSE CURVES FOR BANDWIDTH FILTERS WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?	12.2	10.7	29.4	.7	21.0	2.8	.0	4.2	1.8	10.3
0 880	01-27 DO YOU CALCULATE PEAK POWER OR EFFECTIVE POWER OF SSB OR ISB TRANSMITTERS?	6.5	9.8	21.4	.7	27.3	4.9	.0	4.2	2.4	4.6
0 881	01-28 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB OR ISB TRANSMITTER SCHEMATIC DIAGRAMS?	17.1	13.9	41.3	.7	53.8	3.5	.0	6.3	3.0	13.8
0 882	01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB OR ISB RECEIVER SCHEMATIC DIAGRAMS?	17.1	11.5	43.7	.7	54.5	3.5	2.3	10.6	3.0	13.8
0 883	01-30 DO YOU PERFORM AERONAUTIC STATION ASSESSMENT PROGRAMS (ASAP)?	1.6	4.1	11.1	.0	3.2	.0	.0	.0	.0	.0
0 884	02-1 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 03-1; IF YES, CONTINUE.	15.4	45.9	7.9	2.9	4.2	51.4	55.8	35.2	12.8	8.0
0 885	02-2 DO YOU INSPECT PULSE MODULATION SYSTEMS?	12.2	46.7	3.2	1.5	3.5	45.8	25.6	31.7	12.2	6.9
0 886	02-3 DO YOU CLEAN PULSE MODULATION SYSTEMS?	10.6	38.5	2.4	1.5	2.1	38.0	9.3	27.5	9.1	3.4
0 887	02-4 DO YOU ALIGN PULSE MODULATION SYSTEMS?	12.2	46.7	2.4	1.5	1.4	43.0	18.6	27.5	9.8	4.6
0 888	02-5 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS?	11.4	44.3	1.6	2.2	2.8	45.1	44.2	2.5	12.2	5.7
0 889	02-6 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM COMPONENTS?	9.0	42.6	2.4	2.2	1.4	35.2	23.3	21.1	9.6	5.7
0 890	02-7 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS?	9.8	38.5	1.6	1.5	2.8	44.4	18.6	20.9	12.2	5.7
0 891	02-8 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM COMPONENTS?	9.8	38.5	2.4	1.5	1.4	37.3	16.3	21.8	10.4	5.7
0 892	02-9 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM) PULSE MODULATION SYSTEMS?	7.3	39.3	3.2	.7	.7	39.4	16.3	28.9	7.9	2.3
0 893	02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM) PULSE MODULATION SYSTEMS?	4.1	23.0	2.4	.7	.0	25.4	25.6	18.3	6.7	4.6
0 894	02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM) PULSE MODULATION SYSTEMS?	4.9	14.8	1.6	.0	.0	22.5	4.7	21.8	4.3	1.1
0 895	02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) PULSE MODULATION SYSTEMS?	10.6	23.0	2.4	.0	.7	23.9	11.6	18.3	3.0	3.4
0 896	02-13 DO YOU WORK ON LINE PULSING MODULATION PULSE MODULATION SYSTEMS?	3.3	9.8	.0	.7	.0	8.5	2.3	9.2	2.4	1.1
0 897	02-14 DO YOU WORK ON TIME DIVISION MULTIPLEXING (TDM) PULSE MODULATION SYSTEMS?	9.8	8.2	3.2	.7	1.4	5.6	4.7	19.7	2.4	3.4
0 898	02-15 DO YOU WORK ON - DON'T KNOW WHICH TYPE OF MODULATION SYSTEM?	2.4	4.9	1.6	1.5	2.1	9.9	16.3	2.8	1.8	.0
0 899	02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLY STAGE?	11.4	40.2	2.4	1.5	1.4	43.7	37.2	24.6	9.1	5.7
0 900	02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHOKES AND CHARGING DIODE STAGE?	6.5	22.1	.8	.7	.0	37.3	4.7	9.2	7.9	3.4
0 901	02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORK STAGE?	8.9	40.2	1.6	1.5	.0	43.7	18.6	15.5	7.3	4.6
0 902	02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMER STAGE?	8.9	29.5	1.6	.7	.0	38.7	20.9	18.3	7.9	5.7
0 903	02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATRON STAGE?	3.3	21.3	.0	.0	.0	37.3	7.0	7.7	3.0	1.1

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NO	TSM	TITLES	304 (M)	304 71 (M)	304 74 (M)	305 74 (M)	320 70 (M)	320 71 (M)	320 72 (M)	320 73 (M)	320 74 (M)	320 75 (M)
0	904	02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMER STAGE?	7.3	36.9	.0	.7	.0	40.1	18.6	11.3	6.7	4.6
0	905	02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBE STAGE?	8.1	37.7	.0	.0	.7	43.0	32.6	14.8	8.5	3.4
0	906	02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIER STAGE?	9.8	41.8	1.6	.7	1.4	44.4	37.2	22.5	9.8	4.6
0	907	02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTER STAGE?	8.9	24.6	2.4	.7	1.4	35.9	27.9	20.4	7.9	4.6
0	908	02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIER STAGE?	8.9	30.5	1.6	.7	1.4	44.4	39.5	22.5	10.4	4.6
0	909	02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTOR STAGE?	11.4	36.9	1.6	1.5	1.4	44.4	32.6	21.8	8.5	4.6
0	910	02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIER STAGE?	7.3	35.2	.0	1.5	.0	42.3	20.9	21.8	2.4	1.1
0	911	02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIER STAGE?	6.5	27.0	.0	1.5	.0	33.8	14.0	14.8	2.4	1.1
0	912	02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	5.7	38.5	4.0	2.2	.0	50.0	58.1	29.6	10.4	6.9
0	913	02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	5.7	35.2	4.0	2.2	.7	49.3	58.1	28.2	8.5	6.9
0	914	02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	11.4	45.1	4.0	2.2	.7	50.0	58.1	29.6	10.4	6.9
0	915	02-32 DO YOU USE OR REFER TO PULSE SHAPE WHEN WORKING WITH PULSE MODULATION SYSTEMS?	10.6	44.3	4.0	2.2	1.4	47.9	44.2	26.8	10.4	5.7
0	916	02-33 DO YOU USE OR REFER TO PEAK POWER WHEN WORKING WITH PULSE MODULATION SYSTEMS?	6.5	45.1	2.4	2.2	1.4	47.9	53.5	23.9	9.8	3.4
0	917	02-34 DO YOU USE OR REFER TO AVERAGE POWER WHEN WORKING WITH PULSE MODULATION SYSTEMS?	6.5	43.4	2.4	2.2	.0	47.2	53.5	24.6	9.1	4.6
0	918	02-35 DO YOU USE OR REFER TO DUTY CYCLE (DC) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	7.3	42.6	2.4	2.2	1.4	46.5	51.2	25.4	8.5	4.6
0	919	02-36 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)?	5.7	32.0	2.4	1.5	.0	40.1	37.2	21.8	8.5	4.6
0	920	02-37 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)?	5.7	39.3	2.4	2.2	.0	45.0	30.2	25.4	10.4	5.7
0	921	02-38 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS?	4.9	39.3	2.4	1.5	.0	40.1	39.5	9.9	6.1	2.3
0	922	02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS?	12.2	43.4	1.6	2.2	1.4	45.0	48.8	21.1	9.1	4.6
0	923	02-40 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS?	12.2	40.2	2.4	2.2	1.4	45.1	41.9	27.5	9.1	4.6
0	924	03-1 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB? IF NO, GO TO ITEM P1-1; IF YES, CONTINUE.	41.5	68.0	46.0	2.9	84.6	82.4	74.4	70.4	48.8	73.6
0	925	03-2 DO YOU INSPECT ANTENNAS?	30.1	67.2	34.9	1.5	86.0	80.3	44.2	66.9	48.2	71.3
0	926	03-3 DO YOU CLEAN ANTENNAS?	22.8	54.1	21.4	.7	72.0	61.3	18.6	50.7	38.4	58.6
0	927	03-4 DO YOU PHYSICALLY ALIGN ANTENNAS?	23.6	53.3	21.4	.7	28.7	50.0	4.7	16.9	28.7	24.1
0	928	03-5 DO YOU ELECTRICALLY ALIGN ANTENNAS?	18.7	54.1	21.4	.0	27.3	43.0	14.0	7.7	27.4	24.1
0	929	03-6 DO YOU TROUBLESHOOT TO ANTENNAS?	33.3	63.9	38.1	.0	78.3	70.4	62.8	59.9	47.0	67.8
0	930	03-7 DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS?	19.5	41.8	22.2	.0	52.4	53.5	58.1	14.8	36.0	33.3
0	931	03-8 DO YOU REMOVE OR INSTALL ANTENNAS?	24.4	45.9	23.8	.0	75.5	69.0	2.3	59.9	47.6	60.9

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D TSM	TITLES												
		304 (M)	304 (M)	304 (M)	305 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)
0 932	03-9 DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS?	22.0	34.4	18.3	.0	46.9	49.3	27.9	9.2	36.6	28.7		
0 933	03-10 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF E OR ELECTRIC FIELD LINES?	19.5	26.2	10.3	.7	7.7	14.1	16.3	9.2	3.0	9.2		
0 934	03-11 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF H OR MAGNETIC FIELD LINES?	18.7	26.2	8.7	.7	7.0	14.8	18.6	9.2	2.4	8.0		
0 935	03-12 DO YOU DETERMINE THE DIRECTION OF THE MAGNETIC LINES IN RELATION TO THE ELECTRIC LINES OF FORCE FOR ANTENNAS?	17.1	20.5	10.3	.7	7.0	7.0	9.3	5.6	.6	8.0		
0 936	03-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE OF CORRECT LENGTH (HALF-WAVE) ACT AS RESISTIVE LOADS TO THE GENERATOR?	14.6	32.0	23.0	.7	26.6	14.8	7.0	8.5	2.4	24.1		
0 937	03-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE LONGER THAN A HALF-WAVE ACT AS INDUCTIVE LOADS TO THE GENERATOR?	11.4	30.3	19.8	.7	23.8	14.8	7.0	7.7	2.4	18.4		
0 938	03-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE SHORTER THAN A HALF-WAVE ACT AS CAPACITIVE LOADS TO THE GENERATOR?	11.4	29.5	22.2	.7	23.8	14.8	7.0	7.0	2.4	17.2		
0 939	03-16 DO YOU WORK WITH HERTZ BASIC ANTENNAS?	3.3	6.6	11.1	.7	14.0	14.1	.0	9.2	4.2	9.2		
0 940	03-17 DO YOU WORK WITH MARCONI BASIC ANTENNAS?	2.4	8.2	11.1	.0	7.0	12.0	.0	4.2	6.7	8.0		
0 941	03-18 DO YOU WORK WITH RHOMBIC BASIC ANTENNAS?	.8	4.1	15.9	.7	28.7	13.4	.0	7.7	.0	4.8		
0 942	03-19 DO YOU WORK WITH DIPOLE BASIC ANTENNAS?	14.6	57.4	38.1	.7	43.4	51.4	44.2	36.6	7.3	44.8		
0 943	03-20 DO YOU WORK WITH SCIMITAR BASIC ANTENNAS?	.8	1.6	2.4	.7	2.1	4.9	.0	24.6	.6	.0		
0 944	03-21 DO YOU WORK WITH PARABOLIC BASIC ANTENNAS?	38.2	41.8	15.9	.7	14.7	60.6	.0	26.8	11.6	27.6		
0 945	03-22 DO YOU WORK WITH GROUND PLANE BASIC ANTENNAS?	5.7	33.6	34.1	.7	35.7	33.1	.0	21.8	4.3	27.6		
0 946	03-23 DO YOU WORK WITH FOLDED DIPOLE BASIC ANTENNAS?	4.9	23.8	25.4	.7	8.4	18.3	4.7	13.4	1.2	17.2		
0 947	03-24 DO YOU WORK WITH BROADSIDE ARRAYS?	1.6	10.7	7.1	.7	4.2	8.5	.0	10.6	3.7	1.1		
0 948	03-25 DO YOU WORK WITH END-FIRE ARRAYS?	.8	8.2	7.1	.7	1.4	6.3	2.3	4.2	1.2	1.1		
0 949	03-26 DO YOU WORK WITH CARDIOID ARRAYS?	.8	27.0	6.3	.7	12.6	35.2	.0	2.8	.0	8.0		
0 950	03-27 DO YOU WORK WITH COLLINER ARRAYS?	2.4	21.3	6.3	.7	2.1	4.9	.0	4.9	3.2	1.1		
0 951	03-28 DO YOU WORK WITH PHASE ARRAYS?	3.3	30.3	8.7	1.5	4.9	21.1	72.1	19.0	14.0	5.7		
0 952	03-29 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC INDUCTION FIELDS WHEN WORKING WITH ANTENNAS?	10.6	21.3	7.9	.7	7.7	11.3	2.3	9.9	2.4	5.7		
0 953	03-30 DO YOU MEASURE ELECTROMAGNETIC INDUCTION FIELDS OF ANTENNAS?	3.3	12.3	5.6	.7	.7	5.6	2.3	3.5	1.2	1.1		
0 954	03-31 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC RADIATION FIELDS WHEN WORKING WITH ANTENNAS?	22.0	28.7	15.1	.7	16.8	26.1	20.9	14.8	6.7	13.8		
0 955	03-32 DO YOU MEASURE ELECTROMAGNETIC RADIATION FIELDS OF ANTENNAS?	5.7	27.9	9.5	.7	1.4	8.5	4.7	5.6	3.7	3.4		
0 956	03-33 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA RADIATION?	8.1	14.8	3.2	.7	3.5	7.7	11.6	5.6	1.2	4.6		
0 957	03-34 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA INDUCTION FIELD?	7.3	12.3	2.4	.7	3.5	6.3	9.3	5.6	.6	3.4		
0 958	03-35 ARE ANY OF THE ANTENNAS YOU WORK ON LINEARLY POLARIZED?	12.2	24.6	15.1	.7	10.5	31.7	25.6	28.2	5.5	13.8		
0 959	03-36 ARE ANY OF THE ANTENNAS YOU WORK ON CIRCULARLY POLARIZED?	7.3	17.2	14.3	.7	7.7	29.6	34.9	39.4	4.9	16.1		
0 960	03-37 DO YOU MEASURE OR DETERMINE THE POLARITY OF ANTENNAS YOU WORK ON?	22.0	20.5	9.5	.7	2.1	6.3	7.0	9.9	.6	8.0		

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TITLES

0 961 03-30 DO YOU CONSTRUCT, OR MAKE THE CALCULATIONS NECESSARY TO CONSTRUCT ANTENNAS OF CORRECT LENGTH FOR SPECIFIC WAVELENGTHS?

0 962 03-39 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS?

0 963 03-40 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS?

0 964 03-41 DO THE ANTENNA APRAYS YOU WORK WITH CONTAIN - DON'T
KNOW WHAT KIND OF ELEMENT?
KNOW WHAT KIND OF ELEMENT?

0 965 03-42 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS?

0 966 03-43 DO YOU WORK ON BIDIRECTIONAL ANTENNAS?

0 967 03-44 00 YOU WORK ON OMNIDIRECTIONAL ANTENNAS?

0 960 03-45 DO YOU WORK WITH ROTARY ANTENNA ARRAYS?

P TRANSMISSION LINES (P1), WAVEGUIDES AND CAVITY RESONATORS (P2), MICROWAVE AMPLIFIERS AND OSCILLATORS (P3)

P 969 P1-1 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES? 1 DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES. 1 IF NO, GO TO ITEM P2-1; IF YES, CONTINUE.

P 970 P1-2 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO
OR USE COPPER LOSS OR 'I SUB 2 R' LOSS IN TRANSMISSION
LINES?

P 971 PL-3 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO
OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN
TRANSMISSION LINES?

P 972 PL-4 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO
TRANSMISSION LINES?
JR USE RADIATION LOSS?

P 973 PL-5 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE DIELECTRIC LOSS?

P 974 PI-6 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO
OR USE LEAKAGE LOSSES?
OR USE LEAKAGE LOSSES?

P 975 PR-7 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO
OR USE FARADAY SHIELD?

P 976 P1-8 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES?

P 977 P1-9 DO YOU WORK WITH TWIN LEAD TRANSMISSION LINES?

P 978 P1-10 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES?
P 979 P1-11 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION

LINES?
 P 980 B1-12 ON YOU WORK WITH DIGIC COAXIAL CABLE TRANSMISSION

P 480 P1-12 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES?

P 901 P1-13 DO YOU TROUBLESHOOT TRANSMISSION LINES?

P 982 P1-14 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)?

P 983 P1-15 DO YOU SELECT APPROPRIATE TRANSMISSION LINE
TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS?

O TSM	TITLES	304 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
P1012	P2-13 DO YOU REMOVE OR INSTALL CHOKE JOINTS?	10.6	2.5	.0	.0	.0	13.4	2.3	4.2	9.1	5.7
P1013	P2-14 DO YOU REMOVE OR INSTALL ROTATING JOINTS?	5.7	2.5	.0	.0	.0	15.5	16.3	4.2	13.4	6.9
P1014	P2-15 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS?	30.9	18.9	3.2	.0	.0	38.7	20.9	27.5	19.5	13.8
P1015	P2-16 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS?	17.1	18.9	.8	.0	.0	24.6	16.3	16.2	8.5	8.0
P1016	P2-17 DO YOU REMOVE OR INSTALL DUPLEXERS OR MIXERS?	22.8	19.7	.0	.0	.0	40.1	14.0	16.2	19.5	10.3
P1017	P2-18 DO YOU REMOVE OR INSTALL WAVEGUIDE SHUTTERS?	17.1	1.6	.0	.0	.7	25.4	.0	.7	3.7	4.6
P1018	P2-19 DO YOU REMOVE OR INSTALL TRANSMIT (TR) OR ANTI-TRANSMIT (ATR) TUBES?	4.1	5.7	.0	.0	.0	40.1	4.7	4.2	18.3	2.3
P1019	P2-20 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES?	7.3	2.5	.0	.7	.7	5.6	11.6	2.1	2.4	3.4
P1020	P2-21 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES?	7.3	2.5	.0	.7	.7	5.6	11.6	2.1	2.4	3.4
P1021	P2-22 DO YOU USE OR REFER TO CUT OFF FREQUENCY OF WAVEGUIDES?	15.4	4.9	.0	.7	.7	4.2	9.3	4.2	2.4	3.4
P1022	P2-23 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES?	8.9	2.5	.0	.7	.0	3.5	11.6	3.5	.6	3.4
P1023	P2-24 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES?	7.3	2.5	.0	.7	.0	2.8	11.6	3.5	1.2	3.4
P1024	P2-25 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS?	8.1	2.5	.0	.7	.0	2.8	4.7	.7	.6	3.4
P1025	P2-26 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS?	8.1	2.5	.0	.7	.0	2.8	4.7	.7	.6	3.4
P1026	P2-27 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS?	5.7	3.3	.0	.7	.0	4.2	4.7	.7	1.2	2.3
P1027	P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OR .7 WAVELENGTHS OF THE OPERATING FREQUENCY?	8.9	2.5	.0	.7	.7	7.0	7.0	2.1	1.2	2.3
P1028	P2-29 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 AS AN AVERAGE?	7.3	2.5	.0	.7	.7	5.6	7.0	2.1	.0	2.3
P1029	P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION?	4.9	3.3	.0	.7	.7	2.8	.0	.0	1.2	.0
P1030	P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES?	8.9	4.1	.0	.7	.7	6.3	11.6	.7	1.8	2.3
P1031	P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES?	7.3	3.3	.0	.7	.0	3.5	7.0	1.4	1.2	2.3
P1032	P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES?	4.1	3.3	.0	.7	.0	2.8	4.7	.0	.0	1.1
P1033	P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES?	4.1	3.3	.0	.7	.0	2.8	4.7	.7	.6	2.3
P1034	P2-35 DO YOU WORK WITH HIGH POWER PROBE ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	14.6	9.0	.8	.7	.0	21.1	37.2	13.4	3.7	8.0
P1035	P2-36 DO YOU WORK WITH LOW POWER PROBE ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	22.0	12.3	.8	.7	.7	22.5	14.0	12.0	6.7	3.4
P1036	P2-37 DO YOU WORK WITH LOOP ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	24.4	17.2	.8	.7	.7	24.6	18.6	4.9	1.2	4.6
P1037	P2-38 DO YOU WORK WITH APERTURES (WINDOWS OR IRISES) ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	29.3	3.3	1.6	.7	.7	38.7	55.8	14.1	7.9	3.4
P1038	P2-39 DO YOU WORK WITH CHOKE JOINTS IN WAVEGUIDES OR CAVITY RESONATORS?	17.9	2.5	.8	.7	.0	21.8	16.3	7.7	9.8	1.1

D TSK	TITLES	304 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
P1039	P2-40 DO YOU WORK WITH ROTATING JOINTS IN WAVEGUIDES OR CAVITY RESONATORS?	4.1	2.5	.8	.7	.0	38.7	65.1	3.5	17.7	4.6
P1040	P2-41 DO YOU WORK WITH JOINTS IN WAVEGUIDES OR CAVITY RESONATORS BUT DON'T KNOW WHICH KIND?	14.6	11.5	.8	.0	.7	20.4	7.0	12.0	7.9	9.2
P1041	P2-42 DO YOU TUNE CAVITY RESONATORS USING ELECTRICAL METHODS?	21.1	14.8	2.4	.0	.0	26.8	9.3	9.2	8.5	11.5
P1042	P2-43 DO YOU TUNE CAVITY RESONATORS USING MECHANICAL METHODS?	29.3	23.8	4.0	.0	.0	37.3	7.0	6.3	13.4	13.8
P1043	P2-44 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY RESONATORS?	20.3	16.4	1.6	.7	.0	31.7	4.7	7.0	15.2	6.9
P1044	P3-1 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS, TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR MAGNETRONS? IF NO, GO TO ITEM Q1-13. IF YES, CONTINUE.	52.8	54.9	2.4	1.5	2.1	51.4	62.8	40.8	31.1	12.6
P1045	P3-2 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	19.5	23.0	.8	.7	1.4	15.5	11.6	12.0	1.2	2.3
P1046	P3-3 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	20.3	24.6	.8	.7	1.4	9.9	14.0	8.5	1.2	2.3
P1047	P3-4 DO YOU USE OR REFER TO LEAD INDUCTANCE FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	19.5	18.0	.8	.7	.7	6.3	7.0	7.7	1.2	2.3
P1048	P3-5 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL CIRCUITRY FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	26.0	36.1	1.6	.7	.7	16.9	9.3	14.8	6.1	2.3
P1049	P3-6 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY MODULATION?	40.7	37.7	.8	.7	.7	4.9	37.2	14.1	1.8	3.4
P1050	P3-7 DO YOU USE OR REFER TO ELECTRON BUNCHING?	39.0	33.6	.8	.7	.7	9.2	48.8	19.7	1.2	3.4
P1051	P3-8 DO YOU WORK WITH TWO-CAVITY KLYSTRONS?	9.8	4.1	.0	.7	.7	5.6	14.0	4.9	.0	1.1
P1052	P3-9 DO YOU WORK WITH THREE-CAVITY KLYSTRONS?	26.0	56.6	.0	.7	.7	2.8	41.9	4.2	.0	1.1
P1053	P3-10 DO YOU WORK WITH REFLEX KLYSTRONS?	29.3	6.6	.0	.7	.7	43.0	16.3	9.9	25.0	2.3
P1054	P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)?	39.0	4.9	.8	.7	.7	4.9	65.1	36.6	.6	10.3
P1055	P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC AMPLIFIERS?	6.5	3.3	.0	.7	.0	2.1	27.9	.7	.0	6.9
P1056	P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS?	11.4	3.3	.0	.7	.0	1.4	4.7	.7	.0	2.3
P1057	P3-14 DO YOU WORK WITH MAGNETRON?	4.9	2.5	.0	.7	.7	49.3	.0	21.1	22.0	2.3
P1058	P3-15 DO YOU WORK WITH BACKWARD WAVE OSCILLATORS (BWO)?	3.3	2.5	.0	.7	.0	1.4	.0	19.0	1.2	.0
P1059	P3-16 DO YOU INSPECT KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	43.9	54.1	.8	.7	.0	37.3	48.8	30.3	26.8	10.3
P1060	P3-17 DO YOU CLEAN KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	36.6	43.4	.8	.0	.0	24.6	20.9	23.2	14.6	10.3
P1061	P3-18 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY?	42.3	40.2	.0	.0	.0	27.5	20.9	20.4	12.8	6.9
P1062	P3-19 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY?	43.1	53.3	.0	.0	.0	34.5	2.3	8.5	20.7	6.9
P1063	P3-20 DO YOU PERFORM OPERATIONAL CHECKS ON KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	45.5	52.5	.8	.0	.0	38.7	55.8	30.3	28.7	11.5
P1064	P3-21 DO YOU TROUBLESHOOT KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	39.8	50.0	.0	.0	.0	33.1	55.8	23.9	22.6	11.5
P1065	P3-22 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRONS OR TWT'S?	41.5	50.8	.8	.0	.0	38.0	25.6	30.3	25.6	10.3
P1066	P3-23 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS?	18.7	12.3	.0	.0	.0	10.6	11.6	4.9	4.9	5.7
P1067	P3-24 DO YOU INSPECT PARAMETRIC AMPLIFIERS?	14.6	8.2	.0	.7	.0	4.9	18.6	3.5	.6	8.0

MEESLER ELECTRONIC PPINCIPLES INVENTORY DATA

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D TSK	TITLES	304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
P1068	P3-25 DO YOU CLEAN PARAMETRIC AMPLIFIERS?	10.6	5.7	.0	.0	.0	4.2	7.0	2.1	.0	6.9
P1069	P3-26 DO YOU ADJUST PARAMETRIC AMPLIFIERS?	13.0	6.6	.0	.0	.0	4.2	4.7	1.4	1.2	6.9
P1070	P3-27 DO YOU TUNE PARAMETRIC AMPLIFIERS?	13.0	7.4	.0	.0	.0	3.5	4.7	1.4	1.2	5.7
P1071	P3-28 DO YOU PERFORM OPERATIONAL CHECKS ON PARAMETRIC AMPLIFIERS?	13.8	7.4	.0	.0	.0	4.9	37.2	2.1	.6	9.2
P1072	P3-29 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS?	12.2	6.6	.0	.0	.0	4.9	39.5	.7	.6	9.2
P1073	P3-30 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIERS?	11.4	5.7	.0	.0	.0	4.9	14.0	1.4	.6	8.0
P1074	P3-31 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS?	8.1	6.6	.0	.0	.0	2.8	.0	.7	.0	3.4
P1075	P3-32 DO YOU INSPECT MAGNETRONS?	4.9	.8	.0	.7	.0	46.5	.0	16.9	20.1	2.3
P1076	P3-33 DO YOU CLEAN MAGNETRONS?	4.1	1.6	.0	.0	.0	27.5	.0	12.0	14.0	2.3
P1077	P3-34 DO YOU ADJUST MAGNETRONS?	4.9	1.6	.0	.0	.0	26.8	.0	12.7	15.2	2.3
P1078	P3-35 DO YOU TUNE MAGNETRONS?	4.9	1.6	.0	.0	.0	28.2	.0	12.0	17.7	2.3
P1079	P3-36 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS?	4.9	1.6	.0	.7	.0	45.8	.0	16.2	20.7	2.3
P1080	P3-37 DO YOU TROUBLESHOOT MAGNETRONS?	4.9	1.6	.0	.0	.0	41.5	.0	14.8	17.1	2.3
P1081	P3-38 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRONS?	4.9	1.6	.0	.0	.0	46.5	.0	15.5	21.3	2.3
P1082	P3-39 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS?	3.3	1.6	.0	.0	.0	5.6	.0	2.1	1.8	1.1
P1083	P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF COLLECTOR PLATE COMPONENTS OF TWO-CAVITY KLYSTRONS?	13.0	5.7	.8	.7	.7	5.6	25.6	2.1	1.8	2.3
P1084	P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATCHER CAVITY COMPONENTS OF TWO-CAVITY KLYSTRONS?	13.0	4.9	.8	.7	.7	3.5	16.3	2.1	.6	2.3
P1085	P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATCHER GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	13.0	4.9	.8	.7	.7	4.2	16.3	2.1	.6	2.3
P1086	P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FEEDBACK LOOP COMPONENTS OF TWO-CAVITY KLYSTRONS?	12.2	4.1	.8	.7	.7	5.6	14.0	2.8	1.2	1.1
P1087	P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF DRIFT SPACE COMPONENTS OF TWO-CAVITY KLYSTRONS?	12.2	5.7	.8	.7	.7	2.8	18.6	2.1	.6	1.1
P1088	P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF BUNCHER GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	13.0	5.7	.8	.7	.7	4.2	20.9	2.1	.6	2.3
P1089	P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF BUNCHER CAVITY COMPONENTS OF TWO-CAVITY KLYSTRONS?	13.0	5.7	.8	.7	.7	4.2	18.6	2.1	.6	2.3
P1090	P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CONTROL GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	13.8	6.6	.8	.7	.7	5.6	18.6	2.8	1.8	2.3
P1091	P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF TWO-CAVITY KLYSTRONS?	13.8	6.6	.8	.7	.7	5.6	30.2	2.8	1.8	2.3
P1092	P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REPELLER (REFLECTOR) PLATE COMPONENTS OF REFLEX KLYSTRONS?	23.6	4.1	.8	.7	.7	26.1	7.0	6.3	11.6	2.3
P1093	P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF GRID COMPONENTS OF REFLEX KLYSTRONS?	22.0	8.2	.8	.7	.7	19.0	14.0	7.0	8.5	2.3
P1094	P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF GRID CAVITY GAP COMPONENTS OF REFLEX KLYSTRONS?	17.1	4.9	.8	.7	.7	11.3	9.3	5.6	4.3	2.3
P1095	P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF RESONANT CAVITY COMPONENTS OF REFLEX KLYSTRONS?	22.8	9.0	.8	.7	.7	23.9	9.3	7.0	10.4	2.3
P1096	P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MAGNETIC COUPLING LOOP COMPONENTS OF REFLEX KLYSTRONS?	17.9	4.9	.8	.7	.7	12.7	2.3	6.3	2.4	2.3
P1097	P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FILAMENT COMPONENTS OF REFLEX KLYSTRONS?	25.2	9.0	.8	.7	.7	23.2	14.0	7.7	7.9	2.3

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DO TASK	TITLES	304 70 (M)	304 71 (M)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)	328 75 (M)
P1098	P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF REFLEX KLYSTRONS?	24.4	9.0	.8	.7	.7	23.2	23.3	7.7	9.8	2.3
P1099	P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF OUTPUT LEAD COMPONENTS OF REFLEX KLYSTRONS?	20.3	9.8	.8	.7	.7	22.5	7.0	7.7	8.5	2.3
P1100	P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FILAMENT COMPONENTS OF TRAVELING-WAVE TUBES?	36.6	5.7	.8	.7	.7	2.1	30.2	28.9	.6	4.6
P1101	P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF TRAVELING-WAVE TUBES?	34.1	5.7	.8	.7	.7	2.1	41.9	28.9	.6	4.6
P1102	P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MODULATOR GRID COMPONENTS OF TRAVELING-WAVE TUBES?	26.0	4.9	.8	.7	.7	2.1	32.6	20.4	.6	3.4
P1103	P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF ANODE COMPONENTS OF TRAVELING-WAVE TUBES?	34.1	4.9	.8	.7	.7	2.1	30.2	28.2	.6	3.4
P1104	P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF HELIX COMPONENTS OF TRAVELING-WAVE TUBES?	36.6	4.1	.8	.7	.7	2.1	27.9	28.9	.0	2.3
P1105	P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF COLLECTOR COMPONENTS OF TRAVELING-WAVE TUBES?	35.8	4.9	.8	.7	.7	2.1	41.9	26.8	.6	3.4
P1106	P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MAGNET COMPONENTS OF TRAVELING-WAVE TUBES?	27.6	4.1	.8	.7	.7	2.1	20.9	19.7	.6	3.4
P1107	P3-64 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF ATTENUATOR COMPONENTS OF TRAVELING-WAVE TUBES?	26.8	4.9	.8	.7	.7	2.1	25.6	21.8	.6	3.4
P1108	P3-65 DO YOU PERFORM TASKS ON FERRITE CIRCULATOR COMPONENTS OF PARAMETRIC AMPLIFIERS?	8.1	3.3	.0	.7	.0	2.8	4.7	.0	.0	1.1
P1109	P3-66 DO YOU PERFORM TASKS ON SIGNAL CAVITY COMPONENTS OF PARAMETRIC AMPLIFIERS?	8.1	4.1	.0	.7	.0	2.1	.0	.0	.0	3.4
P1110	P3-67 DO YOU PERFORM TASKS ON IDLER CAVITY COMPONENTS OF PARAMETRIC AMPLIFIERS?	6.5	2.5	.0	.7	.0	1.4	.0	.0	.0	3.4
P1111	P3-68 DO YOU PERFORM TASKS ON VARACTOR DIODE COMPONENTS OF PARAMETRIC AMPLIFIERS?	11.4	3.3	.8	.7	.0	2.1	7.0	.0	.0	3.4
P1112	P3-69 DO YOU PERFORM TASKS ON FERRITE ISOLATOR COMPONENTS OF PARAMETRIC AMPLIFIERS?	8.9	3.3	.0	.7	.0	1.4	2.3	.0	.0	2.3
P1113	P3-70 DO YOU PERFORM TASKS ON REVERSE-BIAS BATTERY COMPONENTS OF PARAMETRIC AMPLIFIERS?	5.7	3.3	.0	.7	.0	1.4	.0	.0	.0	.0
P1114	P3-71 DO YOU PERFORM TASKS ON ANODE COMPONENTS OF MAGNETRONS?	4.9	2.5	.0	.7	.0	7.0	.0	4.2	1.2	2.3
P1115	P3-72 DO YOU PERFORM TASKS ON ANODE COOLING PIN COMPONENTS OF MAGNETRONS?	4.1	2.5	.0	.7	.0	5.6	.0	.7	.0	1.1
P1116	P3-73 DO YOU PERFORM TASKS ON COUPLING LOOP COMPONENTS OF MAGNETRONS?	4.1	2.5	.0	.7	.0	4.9	.0	1.4	.0	1.1
P1117	P3-74 DO YOU PERFORM TASKS ON HEATER LEAD COMPONENTS OF MAGNETRONS?	4.9	2.5	.0	.7	.0	7.0	.0	4.9	2.4	2.3
P1118	P3-75 DO YOU PERFORM TASKS ON RESONANT CAVITY COMPONENTS OF MAGNETRONS?	4.9	2.5	.0	.7	.0	7.7	.0	1.4	1.8	2.3
P1119	P3-76 DO YOU PERFORM TASKS ON CATHODE COMPONENTS OF MAGNETRONS?	4.9	2.5	.0	.7	.0	7.0	2.3	2.8	1.2	2.3
P1120	P3-77 DO YOU PERFORM TASKS ON MAGNET COMPONENTS OF MAGNETRONS?	4.9	2.5	.0	.7	.0	8.5	.0	1.4	.6	1.1

[illegible]

Q REGISTERS (Q1), STORAGE DEVICES (Q2), DIGITAL-TO-ANALOG AND ANALOG-TO-DIGITAL CONVERTERS (Q3)

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D TSK	TITLES	304 (M)	304 71 (M)	304 74 (M)	305 (M)	320 70 (M)	320 71 (M)	320 72 (M)	320 73 (M)	320 74 (M)	320 75 (M)
S1200	S1-13 DO YOU USE OR REFER TO TAPE READERS?	1.6	9.0	13.5	30.9	7.0	3.5	39.5	46.5	29.3	51.7
S1201	S1-14 DO YOU USE OR REFER TO TAPE PUNCHES?	1.6	9.0	11.1	22.8	2.8	1.4	18.6	23.9	3.7	21.8
S1202	S2-1 DO YOU WORK WITH PHOTODIODE PHOTO SENSITIVE DEVICES?	4.9	8.2	13.5	32.4	1.4	9.2	23.3	7.7	1.8	9.2
S1203	S2-2 DO YOU WORK WITH PHOTOTRANSISTOR PHOTO SENSITIVE DEVICES?	4.1	5.7	11.1	17.6	.7	4.2	11.6	4.9	.6	8.0
S1204	S2-3 DO YOU WORK WITH PHOTOTUBE PHOTO SENSITIVE DEVICES?	1.6	2.5	4.0	6.6	2.1	.7	2.3	2.1	1.8	.0
S1205	S2-4 DO YOU WORK WITH PHOTO-SCR PHOTID SENSITIVE DEVICES?	.8	2.5	9.8	4.4	.7	2.8	2.3	1.4	.6	.0
S1206	S2-5 DO YOU WORK WITH PHOTOCCELL (PHOTOCONDUCTIVE OR PHOTOVOLTAIC) PHOTO SENSITIVE DEVICES?	4.1	12.3	17.5	29.4	3.5	7.7	14.0	6.3	3.7	11.5
S1207	S3-1 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS?	1.6	15.6	7.9	2.2	21.0	20.4	4.7	8.5	7.3	9.2
S1208	S3-2 DO YOU USE OR REFER TO EXCITATION FREQUENCY CHOPPER COIL ITEMS?	.8	9.0	3.2	.0	9.1	14.8	4.7	4.2	6.1	3.4
S1209	S3-3 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIP CHOPPER COIL ITEMS?	.8	9.8	4.0	.7	14.0	12.0	4.7	3.5	4.9	4.6
S1210	S3-4 DO YOU MEASURE EXCITATION FREQUENCY CHOPPER COIL ITEMS?	.8	5.7	2.4	.0	6.3	10.6	.0	3.5	3.7	2.3
S1211	S3-5 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIP CHOPPER COIL ITEMS?	.8	7.4	3.2	.7	7.7	11.3	.0	2.8	3.0	1.1
S1212	S3-6 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.8	5.7	4.0	.7	18.2	16.9	.0	2.8	5.5	5.7
S1213	S3-7 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.8	9.8	3.2	.0	16.8	15.5	4.7	4.9	4.9	5.7
S1214	S3-8 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.8	6.6	4.8	.0	16.8	17.6	4.7	7.0	6.7	5.7
S1215	S3-9 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	1.6	10.7	4.8	.0	14.7	15.5	2.3	6.3	4.9	5.7

T	INFRARED (T1), LASERS (T2), DISPLAY TUBES (T3), TELEVISION (T4)	-----									
T1216	T1-1 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS? IF NO, GO TO ITEM T2-1; IF YES, CONTINUE.	.0	2.5	3.2	1.5	.0	.7	.0	4.2	2.4	.0
T1217	T1-2 DO YOU INSPECT INFRARED SYSTEMS?	.0	1.6	.8	.7	.0	.0	.0	2.8	1.8	.0
T1218	T1-3 DO YOU CLEAN INFRARED SYSTEMS?	.0	1.6	.0	.0	.0	.0	.0	2.8	1.8	.0
T1219	T1-4 DO YOU SERVICE INFRARED SYSTEMS?	.0	1.6	.8	.0	.0	.0	.0	2.8	1.2	.0
T1220	T1-5 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS?	.0	1.6	.8	.0	.0	.0	.0	2.8	1.8	.0
T1221	T1-6 DO YOU OPERATE INFRARED SYSTEMS?	.0	1.6	.8	.0	.0	.0	.0	2.1	1.2	.0
T1222	T1-7 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS?	.0	1.6	.8	.0	.0	.0	.0	2.8	1.8	.0
T1223	T1-8 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS?	.0	1.6	.8	.0	.0	.0	.0	2.8	1.8	.0
T1224	T1-9 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS?	.0	1.6	.0	.0	.0	.0	.0	2.1	.6	.0
T1225	T1-10 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS?	.0	1.6	.0	.0	.0	.0	.0	2.8	1.8	.0

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O TSM	TITLES	304 (M)	304 (M)	304 (M)	305 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)	328 (M)
T1226	T1-11 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS?	.0	1.6	.0	.0	.0	.0	.0	.0	2.1	.6	.0	.0
T1227	T1-12 DO YOU USE OR REFER TO FAR REGIONS?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1228	T1-13 DO YOU USE OR REFER TO INTERMEDIATE REGIONS?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1229	T1-14 DO YOU USE OR REFER TO NEAR REGIONS?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1230	T1-15 DO YOU USE OR REFER TO MICRONS IM1?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1231	T1-16 DO YOU USE OR REFER TO GRAY BODIES?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1232	T1-17 DO YOU USE OR REFER TO BLACK BODIES?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1233	T1-18 DO YOU USE OR REFER TO ABSORPTION?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1234	T1-19 DO YOU USE OR REFER TO SCATTERING?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1235	T1-20 DO YOU USE OR REFER TO ABSOLUTE ZERO?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1236	T1-21 DO YOU PERFORM TASKS ON BLITZ?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1237	T1-22 DO YOU PERFORM TASKS ON TARGET BULIONS?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1238	T1-23 DO YOU PERFORM TASKS ON ERECTOR LENSES?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1239	T1-24 DO YOU PERFORM TASKS ON OCULAR LENSES?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1240	T1-25 DO YOU PERFORM TASKS ON CORRECTION LENSES?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1241	T1-26 DO YOU PERFORM TASKS ON FILTERS?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1242	T1-27 DO YOU PERFORM TASKS ON SPHERICAL MIRRORS?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1243	T1-28 DO YOU PERFORM TASKS ON PLANE MIRRORS?	.0	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1244	T2-1 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS? IF NO, GO TO ITEM T3-11. IF YES, CONTINUE.	3.3	.8	4.8	2.2	.0	.7	.0	.7	.7	2.4	.0	.0
T1245	T2-2 DO YOU INSPECT LASER SYSTEMS?	3.3	.0	3.2	1.5	.0	.0	.0	.0	.7	.6	.0	.0
T1246	T2-3 DO YOU CLEAN LASER SYSTEMS?	3.3	.0	2.4	.7	.0	.0	.0	.0	.7	.6	.0	.0
T1247	T2-4 DO YOU SERVICE LASER SYSTEMS?	3.3	.0	2.4	.7	.0	.0	.0	.0	.7	.6	.0	.0
T1248	T2-5 DO YOU OPERATE LASER SYSTEMS?	3.3	.0	2.4	1.5	.0	.0	.0	.0	.7	1.2	.0	.0
T1249	T2-6 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS?	1.6	.0	2.4	.0	.0	.0	.0	.0	.7	1.8	.0	.0
T1250	T2-7 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS?	3.3	.0	2.4	.7	.0	.0	.0	.0	.7	1.2	.0	.0
T1251	T2-8 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS?	.0	.0	2.4	1.5	.0	.0	.0	.0	.0	.6	.0	.0
T1252	T2-9 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS?	3.3	.0	2.4	1.5	.0	.0	.0	.0	.7	.6	.0	.0
T1253	T2-10 DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS?	1.6	.0	2.4	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1254	T2-11 DO YOU USE OR REFER TO ANGSTROMS (A)?	1.6	.0	.0	.7	.0	.0	.0	.0	.7	1.2	.0	.0
T1255	T2-12 DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS?	.0	.0	.0	.7	.0	.0	.0	.0	.7	1.2	.0	.0
T1256	T2-13 DO YOU USE OR REFER TO GROUND STATE?	.0	.0	.0	.0	.0	.0	.0	.0	.7	.6	.0	.0
T1257	T2-14 DO YOU USE OR REFER TO EXCITED STATE?	1.6	.0	.0	.0	.0	.0	.0	.0	.7	.0	.0	.0
T1258	T2-15 DO YOU USE OR REFER TO PACKET OF RADIATION?	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1259	T2-16 DO YOU USE OR REFER TO PHOTONS?	1.6	.0	.0	.0	.0	.0	.0	.0	.7	.0	.0	.0
T1260	T2-17 DO YOU USE OR REFER TO SPONTANEOUS EMISSIONS?	1.6	.0	.0	.0	.0	.0	.0	.0	.7	.0	.0	.0
T1261	T2-18 DO YOU USE OR REFER TO STIMULATED EMISSIONS?	1.6	.0	.0	.0	.0	.0	.0	.0	.7	.0	.0	.0
T1262	T2-19 DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE?	1.6	.0	.0	.7	.0	.0	.0	.0	.7	.0	.0	.0
T1263	T2-20 DO YOU USE OR REFER TO INVERSION LEVELS?	.0	.0	.0	.0	.0	.0	.0	.0	.7	.0	.0	.0
T1264	T2-21 DO YOU USE OR REFER TO MONOCHROMATIC?	1.6	.0	.0	.7	.0	.0	.0	.0	.0	.0	.0	.0
T1265	T2-22 DO YOU WORK WITH ACTIVE MATERIALS?	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0	.0
T1266	T2-23 DO YOU WORK WITH PUMPING SOURCES?	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0	.0
T1267	T2-24 DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS?	.0	.0	1.6	1.5	.0	.0	.0	.0	.0	.0	.0	.0

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D TSK	TITLES	304 70 (M)	304 71 (P)	304 74 (M)	305 74 (M)	328 70 (M)	328 71 (M)	328 72 (M)	328 73 (M)	328 74 (M)
T1260	12-25 DO YOU WORK WITH HALF SILVERED 192R REFLECTIVE MIRRORS?	.0	.0	1.6	.7	.0	.0	.0	.0	.0
T1269	12-26 DO YOU WORK WITH HELICAL FLASHTUBES?	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1270	12-27 DO YOU WORK WITH RUBY MATERIALS?	.0	.0	.0	.7	.0	.0	.0	.0	.0
T1271	12-28 DO YOU WORK WITH HELIUM-NEON MATERIALS?	.0	.0	.0	.0	.0	.0	.0	.0	1.2
T1272	12-29 DO YOU WORK WITH HELIUM-XENON MATERIALS?	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1273	12-30 DO YOU WORK WITH XENON MATERIALS?	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1274	12-31 DO YOU WORK WITH CESIUM-HELIUM MATERIALS?	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1275	12-32 DO YOU WORK WITH ARGON MATERIALS?	.0	.0	.0	1.5	.0	.0	.0	.0	.6
T1276	12-33 DO YOU WORK WITH NEODYMIUM IN GLASS MATERIALS?	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1277	12-34 DO YOU WORK WITH GALLIUM ARSENIDE MATERIALS?	.0	.0	.0	.0	.0	.0	.0	.0	.0
T1278	13-1 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE TUBES, IDVST's, MULTIPLE MODE STORAGE TUBES (MMST), OR SCAN CONVERTER TUBES (SCT)? IF NO, GO TO ITEM T4-1; IF YES, CONTINUE.	.0	2.5	4.0	2.9	.7	27.5	.0	2.1	5.5
T1279	13-2 DO YOU INSPECT DVST OR MMST?	.0	1.6	1.6	1.5	.0	23.9	.0	1.4	3.0
T1280	13-3 DO YOU CLEAN DVST OR MMST?	.0	1.6	1.6	1.5	.0	19.7	.0	.7	2.4
T1281	13-4 DO YOU ADJUST OR CALIBRATE DVST OR MMST?	.0	.0	.0	1.5	.0	16.2	.0	.7	4.3
T1282	13-5 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST?	.0	1.6	1.6	1.5	.7	26.8	.0	.7	5.5
T1283	13-6 DO YOU TROUBLESHOOT DVST OR MMST CIRCUITS?	.0	1.6	.8	1.5	.0	19.7	.0	.7	1.2
T1284	13-7 DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM MAJOR ASSEMBLIES OR UNITS?	.0	1.6	.0	1.5	.0	21.1	.0	.7	1.2
T1285	13-8 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF DVST?	.0	.0	.0	1.5	.0	16.9	.0	.7	1.0
T1286	13-9 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF MMST?	.0	.0	.0	.0	.0	1.4	.0	.7	.6
T1287	13-10 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF SCT?	.0	.0	.0	.0	.0	1.4	.0	.0	.0
T1288	13-11 DO YOU PERFORM TASKS ON FLOOD GUNS?	.0	.0	.0	.7	.0	10.6	.0	.0	.0
T1289	13-12 DO YOU PERFORM TASKS ON WRITE GUNS?	.0	.0	.0	.7	.0	9.2	.0	.0	.6
T1290	13-13 DO YOU PERFORM TASKS ON READ GUNS?	.0	.0	.0	.0	.0	5.9	.0	.0	.0
T1291	13-14 DO YOU PERFORM TASKS ON ATTACK GUNS?	.0	.0	.0	.0	.0	2.1	.0	.0	.0
T1292	13-15 DO YOU PERFORM TASKS ON ERASE GUNS?	.0	.0	.0	.0	.0	8.5	.0	.0	.6
T1293	13-16 DO YOU PERFORM TASKS ON STORAGE GRIDS?	.0	.0	.0	.0	.0	9.2	.0	.0	.0
T1294	14-1 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS DEALING WITH TELEVISION SYSTEMS INCLUDING LOW LIGHT TELEVISION? IF NO, GO TO ITEM U1-1; IF YES, CONTINUE.	4.9	2.5	9.5	3.7	2.1	4.9	2.3	1.4	1.1
T1295	14-2 DO YOU INSPECT TELEVISION SYSTEMS?	4.1	.8	7.1	2.2	1.4	4.2	2.3	.7	1.2
T1296	14-3 DO YOU CLEAN TELEVISION SYSTEMS?	4.1	.8	4.0	1.5	1.4	3.5	.0	.7	.6
T1297	14-4 DO YOU ADJUST OR CALIBRATE TELEVISION SYSTEMS?	4.1	.8	2.4	1.5	1.4	2.8	.0	1.4	.0
T1298	14-5 DO YOU OPERATE TELEVISION SYSTEMS?	4.9	1.6	4.0	1.5	2.1	4.2	2.3	.7	1.8
T1299	14-6 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF TV SYSTEMS?	4.1	.8	4.8	1.5	1.4	4.2	2.3	.7	1.2
T1300	14-7 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF TV SYSTEMS?	4.1	.0	2.4	1.5	1.4	3.5	.0	.0	.6
T1301	14-8 DO YOU TROUBLESHOOT DOWN TO TV SYSTEM COMPONENT PARTS?	4.1	.0	2.4	1.5	.7	.0	.0	.0	.0
T1302	14-9 DO YOU REMOVE OR REPLACE TV SYSTEM MAJOR ASSEMBLIES?	4.1	.8	3.2	1.5	.7	3.5	.0	.0	.6
T1303	14-10 DO YOU REMOVE OR REPLACE TV SYSTEM COMPONENT PARTS?	4.1	.0	2.4	1.5	.7	.7	.0	.0	.0

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM TITLES

U1366 U2-6 DO YOU USE A MP3550 OR 300A TEST SET TO ALIGN AUDIO EQUIPMENT?

304	304	304	305	320	320	320	320	320	320	320
70	71	74	74	70	71	72	73	74	75	
(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)	(M)

45.5 8.2 34.9 6.6 25.9 24.6 .0 4.2 6.1 29.9

KEESLER EPI CAREER LADDERS, ELECTRONIC PRINCIPLES INVENTORY (EPI) DATA ARE PRESENTED BELOW EACH DUTY TITLE. DATA FOR THIS PRINTOUT WERE COLLECTED FROM CAREER LADDER INCUMBENTS DURING THE PEPOID DECEMBER 1982 THROUGH JULY 1983.

USE OF EPI PRINTOUT: THE PERCENT OF VARIOUS CAREER LADDER GROUPS RESPONDING TO EPI QUESTIONS IS LISTED TO THE RIGHT OF EACH EPI ITEM. THUS, THE APPROPRIATE SAMPLE CRITERION GROUPS CAN BE IDENTIFIED WITH THE COLUMN HEADINGS AT THE TOP RIGHT OF EACH PRINTOUT PAGE. THEN THE PERCENT OF THAT GROUP USING THE CONCEPT OR PIECE OF EQUIPMENT CAN BE IDENTIFIED.

USE OF EPI DATA: THESE DATA MAY BE USED IN HELPING TO IDENTIFY, DELINEATE, AND VALIDATE ELECTRONIC PRINCIPLES ITEMS IN THE STS. CRITERIA LISTED IN ATRC 52-22 FOR ABR TRAINING MAY BE USEFUL IN HELPING DEVELOP ENTRY-LEVEL ELECTRONIC PRINCIPLE COURSES. ALSO, CDC WRITERS MAY USE EPI DATA TO HELP DETERMINE AREAS TO EMPHASIZE IN 5- AND 7-SKILL LEVEL CDS, CONSISTENT WITH STS CODES.

FOR ASSISTANCE IN USING PRINTOUTS PHONE USAFOMC/OMYO, AUTOVON 487-5811.

VECTOR TYPE CODES:

- (T) = % TIME SPENT BY ALL MEMBERS
- (M) = % MEMBERS PERFORMING
- (F) = TASK FACTOR
- (D) = DICHOTOMOUS SET
- (B) = % TIME SPENT BY MEMBERS PERFORMING
- (-) = PROGRAM GENERATED VECTOR

NO	TYPE	VECTOR	/MEMBERS/		DESCRIPTION	FACTOR #
			MEAN	SD		
1	M	205 70	89		DAFSC 20570 AIRMEN	30
2	M	307 70	143		DAFSC 30770 AIRMEN	40

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FOR ASSISTANCE IN USING PRINTOUTS PHONE USAFOMC/DMD, AUTOVON 487-5811.

D TSK	TITLES	205	307
		70	70
		(M)	(M)

A MATHEMATICS (A1), DIRECT CURRENT (A2), RESISTANCE AND RESISTIVE CIRCUITS (A3)

A 1	A1-1 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METER OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10?	20.2	64.3
A 2	A1-2 DO YOU USE PUBLICATIONS, SUCH AS TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY OR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB?	27.0	44.1
A 3	A1-3 DO YOU REARRANGE AND SOLVE FORMULAS OR EQUATIONS?	40.4	46.9
A 4	A1-4 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY?	27.0	20.3
A 5	A1-5 DO YOU SOLVE FOR UNKNOWN QUANTITIES SUCH AS SOLVING FOR X IN THE EQUATION $x + 6 = 8$?	44.9	39.2
A 6	A1-6 DO YOU USE LOGARITHM TABLES?	22.5	43.4
A 7	A1-7 DO YOU SOLVE QUADRATIC EQUATIONS SUCH AS SOLVING FOR X IN THE EQUATION $x^2 + 4x + 4 = 0$?	19.1	12.6
A 8	A1-8 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES?	23.6	11.2
A 9	A1-9 DO YOU USE TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT?	30.3	12.6
A 10	A1-10 DO YOU SOLVE OR USE PROPORTIONS? AN EXAMPLE OF A PROPORTION IS $2 : 5 :: 4 : 10$. ANOTHER WAY TO EXPRESS THE SAME RELATIONSHIP IS $2/5 = 4/10$. SOMETIMES, ONE OF THE QUANTITIES IS UNKNOWN AND HAS TO BE SOLVED FOR, SUCH AS $2 : x :: 4 : 10$ IN THIS CASE IS UNKNOWN).	38.2	28.7
A 11	A1-11 DO YOU USE MATHEMATICAL EXPONENTS OR SUBSCRIPTS IN OTHER THAN POWERS OF 10?	36.0	23.8
A 12	A2-1 DO YOU USE (PERHAPS IN TECHNICAL ORDERS) THE TERM VOLTAGE OR VOLT (V)?	42.3	48.8

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FOR ASSISTANCE IN USING PRINTOUTS PHONE USAFOMC/DHYO, AUTOVON 487-5811.

205 307
70 70
(M) (M)

D TSK TITLES

A MATHEMATICS (A1), DIRECT CURRENT (A2), RESISTANCE AND RESISTIVE CIRCUITS (A3)

A 1 A1-1 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METERS OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10?

29.2 64.3

A 2 A1-2 DO YOU USE PUBLICATIONS, SUCH AS TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY FOR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB?

27.0 44.1

A 3 A1-3 DO YOU REARRANGE AND SOLVE FORMULAS OR EQUATIONS?

40.4 46.9

A 4 A1-4 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY?

27.0 20.3

A 5 A1-5 DO YOU SOLVE FOR UNKNOWN QUANTITIES SUCH AS SOLVING FOR X IN THE EQUATION $x + 6 = 8$?

44.9 39.2

A 6 A1-6 DO YOU USE LOGARITHM TABLES?

22.5 43.4

A 7 A1-7 DO YOU SOLVE QUADRATIC EQUATIONS SUCH AS SOLVING FOR X IN THE EQUATION $x^2 + 4x + 4 = 0$?

19.1 12.6

A 8 A1-8 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES?

23.6 11.2

A 9 A1-9 DO YOU USE TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT?

30.3 12.6

A 10 A1-10 DO YOU SOLVE OR USE PROPORTIONS? AN EXAMPLE OF A PROPORTION IS $2 : 5 :: 4 : 10$. ANOTHER WAY TO EXPRESS THE SAME RELATIONSHIP IS $2/5 = 4/10$. SOMETIMES, ONE OF THE QUANTITIES IS UNKNOWN AND HAS TO BE SOLVED FOR, SUCH AS $2 : x :: 4 : 10$ (X IN THIS CASE IS UNKNOWN).

38.2 28.7

A 11 A1-11 DO YOU USE MATHEMATICAL EXPONENTS OR SUBSCRIPTS IN OTHER THAN POWERS OF 10?

36.0 23.8

A 12 A2-1 DO YOU USE (PERHAPS IN TECHNICAL ORDERS) THE TERM VOLTAGE OR VOLT (V)?

42.3 48.8

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPTION PAGE 3

Q TSK	TITLES	205	307	70	70	1M	1M
A 13	A2-2 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM ELECTROMOTIVE FORCE (EMF)?	11.2	15.4				
A 14	A2-3 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM OHM?	25.8	80.4				
A 15	A2-4 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM ION?	7.9	5.6				
A 16	A2-5 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM DYNE?	1.1	1.4				
A 17	A2-6 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM AMPERE?	25.8	77.6				
A 18	A2-7 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM NEUTRON?	5.6	5.6				
A 19	A2-8 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM COULOMB?	5.6	6.3				
A 20	A2-9 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM PROTON?	4.5	5.6				
A 21	A2-10 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM ELECTRON?	22.5	28.7				
A 22	A2-11 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM CURRENT?	31.5	82.5				
A 23	A2-12 DO YOU USE (PERHAPS IN TECHNICAL ORDERS OR ELSEWHERE) THE TERM WATTAGE?	39.3	72.0				
A 24	A2-13 DO YOU DETERMINE IF TWO OR MORE BATTERIES MUST BE CONNECTED IN SERIES OR PARALLEL TO ACHIEVE A SPECIFIC VOLTAGE AND/OR CURRENT?	1.1	21.0				
A 25	A3-1 DO YOU WORK WITH RESISTORS OR RESISTIVE CIRCUITS IN YOUR PRESENT JOB? IF NO, GO TO ITEM B1-1; IF YES, CONTINUE.	2.2	40.6				
A 26	A3-2 DO YOU INSPECT RESISTORS?	.0	15.4				
A 27	A3-3 DO YOU CLEAN RESISTORS?	.0	5.6				
A 28	A3-4 DO YOU ADJUST RESISTORS?	.0	18.9				

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPT04 PAGE

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0 TSK	TITLES	205 (M)	307 70 (M)
A 29	A3-5 DO YOU MEASURE RESISTORS?	.0	31.5
A 30	A3-6 DO YOU USE OR REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASK YOU PERFORM?	.0	2.8
A 31	A3-7 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY CARBON?	.0	9.8
A 32	A3-8 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY FIXED WIRE?	.0	17.5
A 33	A3-9 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY SLIDE TAP?	.0	11.2
A 34	A3-10 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY RHEOSTAT?	.0	17.5
A 35	A3-11 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY POTENTIOMETER?	.0	23.1
A 36	A3-12 DO YOU USE OR REFER TO SYMBOLS THAT IDENTIFY OR CLASSIFY FIXED FILM?	.0	7.0
A 37	A3-13 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE?	.0	16.9
A 38	A3-14 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE?	.0	16.1
A 39	A3-15 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE?	.0	2.8
A 40	A3-16 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES?	1.1	35.7
A 41	A3-17 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	2.2	27.3
A 42	A3-18 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	2.2	23.1
A 43	A3-19 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	2.2	21.0

205 307
70 70
(M) (M)

D TSK TITLES

A 44	A3-20 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR SERIES RESISTIVE CIRCUITS?	2.2	23.1
A 45	A3-21 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	1.1	20.7
A 46	A3-22 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	1.1	23.1
A 47	A3-23 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	1.1	10.2
A 48	A3-24 DO YOU USE OR REFER TO INDIVIDUAL BRANCH CURRENT PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	1.1	17.5
A 49	A3-25 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR SERIES PARALLEL RESISTIVE CIRCUITS?	1.1	21.0
A 50	A3-26 DO YOU USE OR REFER TO TOTAL RESISTANCE PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	1.1	25.2
A 51	A3-27 DO YOU USE OR REFER TO TOTAL CURRENT PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	1.1	21.7
A 52	A3-28 DO YOU USE OR REFER TO INDIVIDUAL VOLTAGE DROP PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	1.1	17.5
A 53	A3-29 DO YOU USE OR REFER TO INDIVIDUAL BRANCH CURRENT PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	1.1	16.8
A 54	A3-30 DO YOU USE OR REFER TO POWER DISSIPATION PARAMETERS FOR PARALLEL RESISTIVE CIRCUITS?	1.1	19.6
A 55	A3-31 DO YOU CALCULATE TOTAL RESISTANCE PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	1.1	23.1
A 56	A3-32 DO YOU CALCULATE TOTAL CURRENT PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	1.1	19.6
A 57	A3-33 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROP PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?	1.1	17.5

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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205 307
70 70
(M) (M)

D TSM TITLES

A 58 A3-34 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENT PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?

1.1 16.8

A 59 A3-35 DO YOU CALCULATE POWER DISSIPATION PARAMETERS FOR SERIES RESISTIVE, SERIES PARALLEL RESISTIVE, OR PARALLEL RESISTIVE CIRCUITS?

1.1 18.2

B METERS/MULTIMETERS (B1), ALTERNATING CURRENT (AC) (B2), INDUCTORS AND INDUCTIVE REACTANCE (B3)

B 60 B1-1 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE RESISTANCE?

4.5 57.3

B 61 B1-2 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE VOLTAGE?

16.9 72.0

B 62 B1-3 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE CURRENT?

4.5 62.9

B 63 B1-4 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE POWER?

9.0 51.0

B 64 B1-5 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE FREQUENCY?

21.3 74.8

B 65 B1-6 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE TEMPERATURE?

6.7 9.1

B 66 B1-7 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE PRESSURE?

2.2 2.8

B 67 B1-8 DO YOU USE METERS OR MULTIMETERS IN YOUR PRESENT JOB TO MEASURE LIGHT LEVELS?

2.2 .7

B 68 B2-1 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM EFFECTIVE VOLTAGE (RMS) IN YOUR PRESENT JOB?

29.2 58.0

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPTON PAGE 7

205 307
70 70
(M) (M)

D TSM TITLES

34.0 63.6

B 69 B2-2 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM PEAK TO PEAK VOLTAGE IN YOUR PRESENT JOB?

30.3 55.9

B 70 B2-3 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM AVERAGE VOLTAGE (DC) IN YOUR PRESENT JOB?

49.4 46.9

B 71 B2-4 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM WAVE LENGTH IN YOUR PRESENT JOB?

70.0 82.5

B 72 B2-5 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM FREQUENCY IN YOUR PRESENT JOB?

27.0 23.0

B 73 B2-6 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM INSTANTANEOUS VALUE IN YOUR PRESENT JOB?

48.3 60.1

B 74 B2-7 DO YOU USE OR REFER TO THE ALTERNATING CURRENT (AC) TERM PHASE RELATIONSHIPS IN YOUR PRESENT JOB?

4.5 14.0

B 75 B3-1 DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKES COILS IN YOUR PRESENT JOB? IF NO, GO TO ITEM C1-1; IF YES, CONTINUE.

.0 4.2

B 76 B3-2 DO YOU INSPECT INDUCTORS?

.0 .7

B 77 B3-3 DO YOU CLEAN INDUCTORS?

.0 4.2

B 78 B3-4 DO YOU ADJUST INDUCTORS?

.0 5.6

B 79 B3-5 DO YOU MEASURE INDUCTORS?

2.2 11.9

B 80 B3-6 DO YOU USE OR REFER TO INDUCTANCE?

.0 7.0

B 81 B3-7 DO YOU USE OR REFER TO HENRIES?

2.2 11.2

B 82 B3-8 DO YOU USE OR REFER TO INDUCTIVE REACTANCE?

.0 1.4

B 83 B3-9 DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS?

.0 2.8

B 84 B3-10 DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS?

1.1 2.8

B 85 B3-11 DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS?

.0 2.1

B 86 B3-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL?

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPTON PAGE 8

205 3C7
70
(M) (P)

D TSK TITLES

B 87 B3-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE?

B 88 B3-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH?

B 89 B3-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL?

B 90 B3-16 DO YOU CALCULATE INDUCTANCE IN ELECTRICAL/ELECTRONIC CIRCUITS?

B 91 B3-17 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS?

B 92 B3-18 DO YOU CALCULATE INDUCTIVE REACTANCE?

B 93 B3-19 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY?

B 94 B3-20 DO YOU WORK WITH POWER INDUCTORS?

B 95 B3-21 DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS?

B 96 B3-22 DO YOU WORK WITH RADIO FREQUENCY INDUCTORS?

C CAPACITORS AND CAPACITIVE REACTANCE (C1), TRANSFORMERS (C2), MAGNETISM (C3)

C 97 C1-1 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM C2-1: IF YES, CONTINUE.

C 98 C1-2 DO YOU INSPECT CAPACITORS?

C 99 C1-3 DO YOU CLEAN CAPACITORS?

.0 2.1

.0 2.8

.0 2.1

.0 4.2

.0 7.0

.0 5.6

.0 8.4

.0 .7

.0 9.8

.0 6.3

4.5 20.3

.0 4.9

.0 1.4

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPTON PAGE 9

O TSM	TITLES	205	307
		70	70
		(M)	(M)
C 100	C1-4 DO YOU ADJUST CAPACITORS?	.0	3.5
C 101	C1-5 DO YOU TEST CAPACITORS?	.0	4.9
C 102	C1-6 DO YOU DISCHARGE CAPACITORS?	.0	2.8
C 103	C1-7 DO YOU MEASURE CAPACITORS?	.0	2.8
C 104	C1-8 DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE?	.0	5.6
C 105	C1-9 DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTRONS IN A DIELECTRIC?	.0	.0
C 106	C1-10 DO YOU USE OR REFER TO FARADS, MICROFARADS, OR PICOFARADS?	1.1	12.6
C 107	C1-11 DO YOU USE OR REFER TO CAPACITANCE?	1.1	16.1
C 108	C1-12 DO YOU USE OR REFER TO DIELECTRIC CONSTANT?	1.1	7.0
C 109	C1-13 DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF CAPACITORS?	.0	6.3
C 110	C1-14 DO YOU USE OR REFER TO CAPACITIVE REACTANCE?	1.1	9.1
C 111	C1-15 DO YOU USE OR REFER TO CAPACITOR COLOR CODES?	.0	2.8
C 112	C1-16 DO YOU WORK WITH CAPACITORS IN DC CIRCUITS?	.0	15.4
C 113	C1-17 DO YOU WORK WITH CAPACITORS IN AC CIRCUITS?	1.1	16.1
C 114	C1-18 DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC AND AC?	.0	11.2
C 115	C1-19 DO YOU CALCULATE CAPACITANCE IN ELECTRICAL/ELECTRONIC CIRCUITS?	.0	3.5
C 116	C1-20 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE DIELECTRIC CONSTANT?	1.1	3.5
C 117	C1-21 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO THE DIELECTRIC THICKNESS?	.0	1.4
C 118	C1-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO SO?	1.1	2.8

MEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLES	205 (M)	307 70 (M)
C 119	C1-23 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LEADS VOLTAGE IN AC CAPACITOR CIRCUITS?	1.1	5.6
C 120	C1-24 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO FREQUENCY?	1.1	6.3
C 121	C1-25 DO YOU CALCULATE CAPACITIVE REACTANCE?	.0	3.5
C 122	C1-26 DO YOU WORK WITH VARIABLE CAPACITORS?	.0	9.1
C 123	C1-27 DO YOU WORK WITH TRIMMER CAPACITORS?	.0	3.5
C 124	C1-28 DO YOU WORK WITH ELECTROLYTIC (FIXED) CAPACITORS?	.0	8.4
C 125	C1-29 DO YOU WORK WITH OTHER FIXED CAPACITORS?	1.1	8.4
C 126	C2-1 DO YOU WORK WITH TRANSFORMERS IN YOUR PRESENT JOB?	3.4	24.5
	IF NO, GO TO ITEM C3-1; IF YES, CONTINUE.		
C 127	C2-2 DO YOU INSPECT TRANSFORMERS?	.0	8.4
C 128	C2-3 DO YOU CLEAN TRANSFORMERS?	.0	2.8
C 129	C2-4 DO YOU ADJUST TRANSFORMERS?	.0	8.9
C 130	C2-5 DO YOU TROUBLESHOOT TRANSFORMERS?	.0	6.3
C 131	C2-6 DO YOU MAKE A DISTINCTION BETWEEN MUTUAL INDUCTION AND MUTUAL INDUCTANCE (M)?	.0	.0
C 132	C2-7 DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE, M?	.0	.7
C 133	C2-8 DO YOU REFER TO OR USE THE COEFFICIENT OF COUPLING WHEN WORKING WITH TRANSFORMERS?	.0	3.5
C 134	C2-9 DO YOU CALCULATE TURNS RATIOS FOR TRANSFORMERS USING CURRENT OR VOLTAGE RATIOS?	.0	3.5
C 135	C2-10 DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH TRANSFORMERS?	.0	9.1
C 136	C2-11 DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR TRANSFORMERS?	.0	5.6
C 137	C2-12 DO YOU WORK WITH AUTOTRANSFORMERS?	.0	2.1
C 138	C2-13 DO YOU WORK WITH POWER TRANSFORMERS?	1.1	5.6
C 139	C2-14 DO YOU WORK WITH AUDIO TRANSFORMERS?	.0	20.3
C 140	C2-15 DO YOU WORK WITH RADIO FREQUENCY TRANSFORMERS?	.0	7.7

MEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLES	205 70 (M)	307 70 (M)
C 141	C2-16 DO YOU WORK WITH SATURABLE CORE TRANSFORMERS?	.0	1.4
C 142	C2-17 DO YOU WORK WITH SENSING TRANSFORMERS?	.0	.0
C 143	C2-18 DO YOU WORK WITH CONTROL TRANSFORMERS?	.0	1.4
C 144	C2-19 DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY MEASURING RESISTANCE?	.0	7.0
C 145	C2-20 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING RESISTANCE?	.0	6.3
C 146	C2-21 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING OUTPUT VOLTAGES?	.0	3.5
C 147	C2-22 DO YOU MEASURE RESISTANCE OF TRANSFORMER WINDINGS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO?	.0	3.5
C 148	C2-23 DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO?	.0	2.8
C 149	C2-24 DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS?	.0	13.3
C 150	C2-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	7.7
C 151	C2-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	9.8
C 152	C2-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	11.2
C 153	C2-28 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	4.2
C 154	C2-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	4.9
C 155	C2-30 DO YOU REFER TO VARIABLE TRANSFORMER SCHEMATIC SYMBOLS?	.0	7.7
C 156	C2-31 DO YOU REFER TO COMBINATIONS OF SCHEMATIC SYMBOLS FOR TRANSFORMERS?	.0	9.8

KEESLER ELECTRONIC PPINCIPLES INVENTORY DATA

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O TSK	TITLES	205 70 (M)	307 70 (M)
C 157	C2-32 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND-PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS?	.0	1.4
C 158	C2-33 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH?	.0	1.4
C 159	C2-34 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO?	.0	4.2
C 160	C2-35 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS?	1.1	8.4
C 161	C2-36 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS?	.0	4.2
C 162	C2-37 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS?	.0	2.1
C 163	C2-38 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS?	.0	2.1
C 164	C2-39 DO YOU INSPECT THREE PHASE TRANSFORMERS?	.0	.0
C 165	C2-40 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS?	.0	.0
C 166	C2-41 DO YOU ADJUST THREE PHASE TRANSFORMERS?	.0	.0
C 167	C2-42 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS?	.0	.0
C 168	C3-1 DO YOU USE OR REFER TO PERMANENT MAGNETS?	5.6	4.2
C 169	C3-2 DO YOU USE OR REFER TO TEMPORARY MAGNETS?	7.9	2.1
C 170	C3-3 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS?	9.0	.7
C 171	C3-4 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS?	6.7	.7
C 172	C3-5 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS?	7.9	.7
C 173	C3-6 DO YOU USE OR REFER TO RESIDUAL MAGNETISM?	7.9	2.1
C 174	C3-7 DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX?	13.5	5.6

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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205	307
70	70
(M)	(P)
4.5	.0
6.7	.0
11.2	5.6
6.7	2.1
5.6	.0

D TSM TITLES

C 175 C3-8 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM?
 C 176 C3-9 DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM?
 C 177 C3-10 DO YOU USE OR REFER TO MAGNETIC INDUCTION?
 C 178 C3-11 DO YOU USE OR REFER TO FLUX DENSITY?
 C 179 C3-12 DO YOU USE OR REFER TO SATURABLE REACTANCE?

D RCL CIRCUITS (01), TIME CONSTANTS (02), FILTERS (03)

D 180 D1-1 DO YOU WORK WITH RC, LR, OR RCL CIRCUITS IN YOUR PRESENT JOB? IF NO, GO TO ITEM D2-1; IF YES, CONTINUE.
 D 181 D1-2 DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL CIRCUITS?
 D 182 D1-3 DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN WORKING WITH RCL CIRCUITS?
 D 183 D1-4 DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL CIRCUITS?
 D 184 D1-5 DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL CIRCUITS?
 D 185 D1-6 DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL CIRCUITS?
 D 186 D1-7 DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL CIRCUITS?
 D 187 D1-8 DO YOU USE OR REFER TO TRUE POWER (P SUB T) WHEN WORKING WITH RCL CIRCUITS?
 D 188 D1-9 DO YOU USE OR REFER TO MAXIMUM POWER (P SUB M) WHEN WORKING WITH RCL CIRCUITS?
 D 189 D1-10 DO YOU USE OR REFER TO AVERAGE POWER (P SUB AVE) WHEN WORKING WITH RCL CIRCUITS?

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O TSM	TITLES	205	307
		70	70
		(P)	(P)
O 190	O1-11 DO YOU USE OR REFER TO APPARENT POWER (P SUB A) WHEN WORKING WITH RCL CIRCUITS?	3.4	4.2
O 191	O1-12 DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING WITH RCL CIRCUITS?	2.2	4.9
O 192	O1-13 DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN WORKING WITH RCL CIRCUITS?	2.2	7.7
O 193	O1-14 DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH RCL CIRCUITS?	5.6	14.0
O 194	O1-15 DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH RCL CIRCUITS?	4.5	10.5
O 195	O1-16 DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN WORKING WITH RCL CIRCUITS?	3.4	10.5
O 196	O1-17 DO YOU USE OR REFER TO HALF POWER POINTS WHEN WORKING WITH RCL CIRCUITS?	4.5	4.9
O 197	O1-18 DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING WITH RCL CIRCUITS?	4.5	12.6
O 198	O1-19 DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH RCL CIRCUITS?	1.1	4.9
O 199	O1-20 DO YOU USE OR REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS?	2.2	4.9
O 200	O1-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS SUCH AS: SINE OF AND ANGLE = OPPOSITE SIDE/HYPOTENUSE?	2.2	2.1
O 201	O1-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS?	.0	3.5
O 202	O1-23 DO YOU USE OR REFER TO TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS?	.0	7.0
O 203	O1-24 DO YOU USE OR REFER TO PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS?	1.1	2.1
O 204	O1-25 DO YOU USE OR REFER TO TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS?	.0	9.1

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLES	205	307	70	(M)	(P)
D 205	D1-26 DO YOU USE OR REFER TO IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS?	.0	2.1			
D 206	D1-27 DO YOU USE OR REFER TO APPARENT POWER (P SUB A) FOR SERIES RCL CIRCUITS?	1.1	3.5			
D 207	D1-28 DO YOU USE OR REFER TO TRUE POWER (P SUB T) FOR SERIES RCL CIRCUITS?	1.1	4.9			
D 208	D1-29 DO YOU USE OR REFER TO POWER FACTORS (PF) FOR SERIES RCL CIRCUITS?	.0	4.2			
D 209	D1-30 DO YOU USE OR REFER TO TOTAL CURRENT FOR PARALLEL RCL CIRCUITS?	.0	4.9			
D 210	D1-31 DO YOU USE OR REFER TO IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS?	.0	3.5			
D 211	D1-32 DO YOU USE THE ASSUMED VOLTAGE METHOD FOR DETERMINING TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS?	.0	1.4			
D 212	D1-33 DO YOU USE OHM'S LAW FOR DETERMINING TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS?	.0	4.9			
D 213	D1-34 DO YOU CHECK CAPACITORS USING OHMMETERS?	.0	3.5			
D 214	D1-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION?	.0	2.1			
D 215	D1-36 DO YOU CHECK INDUCTORS USING OHMMETERS?	.0	4.2			
D 216	D1-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION?	.0	2.1			
D 217	D1-38 DO YOU CHECK RESISTORS USING OHMMETERS?	.0	7.7			
D 218	D1-39 DO YOU CHECK RESISTORS USING SUBSTITUTION?	.0	2.1			
D 219	D1-40 DO YOU USE OR REFER TO THE RULE THAT PHASE ANGLE (THETA) = 0, POWER FACTOR (PF) = 1, AND APPARENT POWER (P SUB A) = TRUE POWER (P SUB T) FOR RESONANT CIRCUITS?	1.1	1.4			
D 220	D1-41 DO YOU USE OR REFER TO RESONANT FREQUENCIES FOR RCL CIRCUITS?	1.1	5.6			
D 221	D1-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS?	1.1	6.3			

KEESLER ELECTRONIC PPINCIPLES INVENTORY DATA

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D TSM	TITLES	205 70 (M)	307 70 (M)
D 222 D1-43	DO YOU USE OR REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS?	1.1	6.3
D 223 D1-44	DO YOU USE OR REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 OF THE PEAK CURRENT VALUE?	2.2	6.3
D 224 D1-45	DO YOU USE OR REFER TO THE GENERAL RULE THAT BANDWIDTH IS INVERSELY PROPORTIONAL TO THE QUALITY OF THE COIL (Q)?	1.1	2.8
D 225 D1-46	DO YOU DETERMINE HOW CHANGES IN FREQUENCY, RESISTANCE, CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT OR PHASE ANGLES FOR RCL CIRCUITS?	1.1	4.9
D 226 D2-1	IN YOUR PRESENT JOB, DO YOU WORK WITH, USE, OR REFER TO TIME CONSTANTS? IF NO, GO TO ITEM D3-1; IF YES, CONTINUE.	5.6	1.4
D 227 D2-2	DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (TC)?	.0	.7
D 228 D2-3	DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS?	3.4	.7
D 229 D2-4	DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR RC OR LR CIRCUITS?	.0	.7
D 230 D2-5	DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS?	.0	.7
D 231 D2-6	DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES?	.0	.7
D 232 D2-7	DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OR ZERO) AFTER FIVE (5) TIME CONSTANTS?	.0	.7

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FCPT04 PAGE 17

205 307
70 70
(M) (M)

D TSM TITLES

D 233 03-1 DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM E1-1; IF YES, CONTINUE.

21.3 28.7

D 234 03-2 DO YOU INSPECT FILTER CIRCUITS?

.0 7.7

D 235 03-3 DO YOU CLEAN FILTER CIRCUITS?

.0 2.1

D 236 03-4 DO YOU ALIGN OR ADJUST FILTER CIRCUITS?

2.2 9.8

D 237 03-5 DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL?

.0 14.7

D 238 03-6 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF FILTER CIRCUITS?

.0 5.6

D 239 03-7 DO YOU WORK WITH LOW PASS FILTERS?

22.5 22.4

D 240 03-8 DO YOU WORK WITH HIGH PASS FILTERS?

21.3 21.7

D 241 03-9 DO YOU WORK WITH BANDPASS FILTERS?

20.2 27.3

D 242 03-10 DO YOU WORK WITH BAND-REJECT FILTERS?

19.1 21.0

D 243 03-11 DO YOU WORK WITH FILTERS BUT DON'T REMEMBER WHICH TYPE?

3.4 .7

D 244 03-12 DO YOU WORK WITH L-SECTION FILTER CONFIGURATIONS?

.0 7.0

D 245 03-13 DO YOU WORK WITH T-SECTION FILTER CONFIGURATIONS?

.0 7.7

D 246 03-14 DO YOU WORK WITH PI-SECTION FILTER CONFIGURATIONS?

.0 5.6

D 247 03-15 DO YOU WORK WITH YTTRIUM IRON GARNET (YIG) FILTERS?

3.4 .7

D 248 03-16 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC FILTERS?

.0 1.4

E COUPLING (E1), SOLDERING OR SOLDERLESS CONNECTIONS(E2), RELAYS (E3)

E 249 E1-1 DO YOU WORK WITH COUPLING DEVICES OR CIRCUITRY IN YOUR PRESENT JOB? IF NO, GO TO ITEM E2-1; IF YES, CONTINUE.

6.7 18.2

O TSK	TITLES	205	307	70	(M)	(M)
E 250	E1-2 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC COUPLING?	1.1	4.2			
E 251	E1-3 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH IMPEDANCE COUPLING (MATCHING)?	2.2	14.7			
E 252	E1-4 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH OPTICAL COUPLING?	.0	.7			
E 253	E1-5 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH TRANSFORMER COUPLING?	.0	12.6			
E 254	E1-6 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM RC COUPLING?	1.1	4.9			
E 255	E1-7 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM IMPEDANCE COUPLING?	.0	14.0			
E 256	E1-8 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM TRANSFORMER COUPLING?	.0	12.6			
E 257	E1-9 DO YOU WORK WITH DIRECT COUPLED CIRCUITS?	3.4	7.7			
E 258	E1-10 DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED CIRCUITS?	1.1	5.6			
E 259	E1-11 DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED CIRCUITS?	1.1	4.9			
E 260	E1-12 DO YOU WORK WITH OPTICAL COUPLING?	.0	.7			
E 261	E1-13 DO YOU WORK WITH OPTICAL COUPLING CIRCUITS?	.0	.7			
E 262	E1-14 DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS?	1.1	13.3			
E 263	E2-1 IN YOUR PRESENT JOB, DO YOU CONNECT ELECTRONIC CIRCUITS USING SOLDERLESS CONNECTIONS OR SOLDERING TECHNIQUE? IF NO, GO TO ITEM E3-1; IF YES, CONTINUE.	1.1	27.3			
E 264	E2-2 DO YOU SOLDER CONNECTIONS?	1.1	20.3			
E 265	E2-3 DO YOU DESOLDER CONNECTIONS?	1.1	19.6			

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D TSK	TITLES	205	307	70	70	(M)	(M)
E 266 E2-4	DO YOU PERFORM HIGH RELIABILITY SOLDERING?	.0	7.0				
E 267 E2-5	DO YOU INSPECT SOLDERED CONNECTIONS?	.0	20.3				
E 268 E2-6	DO YOU CLEAN OR TIN CONNECTIONS?	1.1	18.2				
E 269 E2-7	DO YOU MAKE HARDWIRE CONNECTIONS?	1.1	22.4				
E 270 E2-8	DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS?	.0	8.4				
E 271 E2-9	DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS?	.0	8.4				
E 272 E2-10	DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS?	.0	6.3				
E 273 E2-11	DO YOU SOLDER ACTIVE COMPONENTS, SUCH AS INTEGRATED CIRCUITS?	.0	4.9				
E 274 E2-12	DO YOU PERFORM WIRE WRAPPING IN LIEU OF SOLDERING?	.0	18.9				
E 275 E2-13	DO YOU PERFORM CHIMPING IN LIEU OF SOLDERING?	.0	11.9				
E 276 E2-14	DO YOU PERFORM WIRE CONNECTIONS USING A 714 PUNCH-ON TOOL IN LIEU OF SOLDERING?	.0	6.3				
E 277 E3-1	DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB? IF NO, GO TO ITEM F1-1; IF YES, CONTINUE.	1.1	28.0				
E 278 E3-2	DO YOU ADJUST RELAYS?	.0	9.1				
E 279 E3-3	DO YOU CLEAN RELAYS?	.0	2.8				
E 280 E3-4	DO YOU INSPECT RELAYS?	.0	6.3				
E 281 E3-5	DO YOU TROUBLESHOOT RELAYS?	.0	21.7				
E 282 E3-6	DO YOU MONITOR BIAS OUTPUT ON RELAYS?	.0	18.9				
E 283 E3-7	DO YOU REMOVE OR REPLACE RELAYS?	.0	9.8				
E 284 E3-8	DO YOU PERFORM TASKS ON CONTACTS OF RELAYS?	.0	2.8				
E 285 E3-9	DO YOU PERFORM TASKS ON COILS OF RELAYS?	.0	.7				
E 286 E3-10	DO YOU PERFORM TASKS ON ARMATURES OF RELAYS?	.0	2.8				
E 287 E3-11	DO YOU PERFORM TASKS ON SPRINGS OF RELAYS?	.0	2.1				
E 288 E3-12	DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAYS?	.0	6.3				

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLES	205	307	70	(M)
E 290	E3-14 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS?	.0	6.3		
E 291	E3-15 DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT) SCHEMATIC SYMBOLS FOR RELAYS?	.0	6.3		
E 292	E3-16 DO YOU USE OR REFER TO DOUBLE POLE, DOUBLE THROW (DPDT) SCHEMATIC SYMBOLS FOR RELAYS?	.0	5.6		
E 293	E3-17 DO YOU USE OR REFER TO OTHER RELAY SYMBOLS?	.0	7.0		
E 294	E3-18 DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE?	.0	4.9		

F MICROPHONES AND SENSING DEVICES (F1), SPEAKERS (F2), OSCILLOSCOPES (F3)

F 295	F1-1 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH MICROPHONES OR OTHER SENSING DEVICES SUCH AS TRANSDUCERS? IF NO, GO TO ITEM F2-1; IF YES, CONTINUE.	20.2	19.6		
F 296	F1-2 DO YOU INSPECT MICROPHONES?	2.2	9.1		
F 297	F1-3 DO YOU CLEAN MICROPHONES?	1.1	7.0		
F 298	F1-4 DO YOU OPERATE MICROPHONES?	19.1	19.6		
F 299	F1-5 DO YOU TROUBLESHOOT MICROPHONE WIRE CONNECTIONS?	1.1	9.8		
F 300	F1-6 DO YOU TROUBLESHOOT MICROPHONE COMPONENT PARTS OTHER THAN WIRE CONNECTIONS?	.0	4.2		
F 301	F1-7 DO YOU REMOVE AND REPLACE COMPLETE MICROPHONES?	5.6	11.2		
F 302	F1-8 DO YOU REMOVE OR REPLACE MICROPHONE COMPONENT PARTS?	.0	2.8		
F 303	F1-9 DO YOU PERFORM TASKS ON CARBON MICROPHONES?	2.2	7.7		
F 304	F1-10 DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES?	.0	.7		
F 305	F1-11 DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES?	1.1	1.4		
F 306	F1-12 DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES?	3.4	7.0		
F 307	F1-13 DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES?	.0	.7		

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D TSK	TITLES	205 (M)	307 70 (M)
F 308 F1-14	DO YOU PERFORM TASKS ON TRANSDUCERS?	1.1	1.4
F 309 F2-1	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH SPEAKERS? IF NO, GO TO ITEM F3-1; IF YES, CONTINUE.	22.5	42.0
F 310 F2-2	DO YOU INSPECT SPEAKERS?	2.2	15.4
F 311 F2-3	DO YOU CLEAN SPEAKERS?	2.2	9.1
F 312 F2-4	DO YOU OPERATE SPEAKERS?	21.3	44.1
F 313 F2-5	DO YOU TROUBLESHOOT SPEAKER WIRE CONNECTIONS?	3.4	17.5
F 314 F2-6	DO YOU TROUBLESHOOT SPEAKER COMPONENT PARTS OTHER THAN WIRE CONNECTIONS?	.0	2.0
F 315 F2-7	DO YOU REMOVE OR REPLACE COMPLETE SPEAKERS?	4.5	9.1
F 316 F2-8	DO YOU REMOVE OR REPLACE SPEAKER PARTS?	.0	2.1
F 317 F2-9	DO YOU PERFORM ANY TASKS ON CONE SPEAKER PARTS?	.0	2.1
F 318 F2-10	DO YOU PERFORM ANY TASKS ON SPIDER SPEAKER PARTS?	.0	.7
F 319 F2-11	DO YOU PERFORM ANY TASKS ON FIELD COIL SPEAKER PARTS?	.0	1.4
F 320 F2-12	DO YOU PERFORM ANY TASKS ON VOICE COIL SPEAKER PARTS?	.0	2.0
F 321 F2-13	DO YOU PERFORM ANY TASKS ON PERMANENT MAGNET SPEAKER PARTS?	.0	.7
F 322 F2-14	DO YOU PERFORM ANY TASKS ON ELECTROMAGNET SPEAKER PARTS?	.0	.7
F 323 F2-15	DO YOU PERFORM ANY TASKS ON SOFT IRON CORE SPEAKER PARTS?	.0	.7
F 324 F3-1	DO YOU USE OSCILLOSCOPES IN YOUR PRESENT JOB? IF NO, GO TO ITEM G1-1; IF YES, CONTINUE.	38.2	68.5
F 325 F3-2	DO YOU PERFORM OPERATIONAL CHECKS USING OSCILLOSCOPES?	30.3	60.8
F 326 F3-3	DO YOU PERFORM ALIGNMENTS OR ADJUSTMENTS USING OSCILLOSCOPES?	15.7	38.5
F 327 F3-4	DO YOU TROUBLESHOOT ELECTRONIC CIRCUITS USING OSCILLOSCOPES?	2.2	49.0
F 328 F3-5	DO YOU USE OSCILLOSCOPES TO MEASURE FREQUENCIES?	37.1	54.5
F 329 F3-6	DO YOU USE OSCILLOSCOPES TO MEASURE TIME?	36.0	43.4

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205 307
70
(M) (M)

O TSM TITLES

20.1 14.7

10.1 25.9

24.7 15.4

30.3 49.0

25.8 58.0

23.6 36.4

31.5 63.6

9.0 25.2

16.9 41.3

24.7 33.6

33.7 50.3

21.3 24.5

F 330 F3-7 DO YOU USE OSCILLOSCOPES TO OBSERVE LISSAJOUS PATTERNS?

F 331 F3-8 DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE UTILIZING ATTENUATOR PROBES.

F 332 F3-9 DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME MEASUREMENTS USING DELAY TIME MULTIPLIERS?

F 333 F3-10 DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGES?

F 334 F3-11 DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGES?

F 335 F3-12 DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROLS?

F 336 F3-13 DO YOU USE OSCILLOSCOPES TO OBSERVE DATA PATTERNS?

F 337 F3-14 DO YOU USE OSCILLOSCOPES TO MEASURE RIPPLE VOLTAGES?

F 338 F3-15 DO YOU USE OSCILLOSCOPES TO MEASURE PHASE JITTERS?

F 339 F3-16 DO YOU USE OSCILLOSCOPES TO DISPLAY SWEEP GENERATOR PATTERNS?

F 340 F3-17 DO YOU USE OSCILLOSCOPES TO OBSERVE PHASE RELATIONSHIPS?

F 341 F3-18 DO YOU USE OSCILLOSCOPES TO OBSERVE SAMPLING DISPLAYS?

6 SEMICONDUCTOR DIODES (G1), TRANSISTORS (G2), TRANSISTOR AMPLIFIERS (G3)

6 342 G1-1 DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT JOB? IF NO, GO TO ITEM G2-1; IF YES, CONTINUE.

6 343 G1-2 DO YOU INSPECT DIODES?

6 344 G1-3 DO YOU CHECK DIODES?

2.2 2.1

.0 1.4

.0 1.4

D TSK	TITLES	205 70 (M)	307 70 (M)
6 345	61-4 DO YOU USE ENERGY LEVEL DIAGRAMS IN YOUR WORK WITH DIODES?	.0	.0
6 346	61-5 DO YOU USE PN JUNCTION DIODE CHARACTERISTIC CURVES, TOGETHER WITH VALUES OF FORWARD AND REVERSE BIAS VOLTAGE, TO COMPUTE FORWARD OR REVERSE BIAS RESISTANCE?	.0	.0
6 347	61-6 DO YOU COMPUTE FORWARD OR REVERSE BIAS RESISTANCE FOR JIODES?	.0	.0
6 348	61-7 DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES?	.0	1.4
6 349	61-8 DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONIC COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE?	.0	2.1
6 350	61-9 DO YOU REFER TO OR DO YOU DETERMINE THE GENERAL EFFECTS OF DOPING ON CURRENT FLOW?	.0	.0
6 351	61-10 DO YOU MEASURE FORWARD BIAS RESISTANCE?	.0	1.4
6 352	61-11 DO YOU MEASURE REVERSE BIAS RESISTANCE?	.0	1.4
6 353	61-12 DO YOU READ DIODE COLOR CODING?	.0	.7
6 354	61-13 DO YOU READ DIODE NUMBERING SYSTEM, SUCH AS IN 5387	.0	.0
6 355	61-14 DO YOU USE THE SYMBOL ON DIODE WHICH INDICATES THE CATHODE END?	.0	1.4
6 356	61-15 DO YOU DETERMINE DIRECTION OF CURRENT THROUGH A DIODE?	.0	1.4
6 357	61-16 DO YOU NEED TO KNOW WHICH MATERIALS ARE USED IN THE CONSTRUCTION OF DIODES SUCH AS GERMANIUM OR SILICON?	.0	.7
6 358	61-17 DO YOU NEED TO KNOW THAT SEMICONDUCTORS HAVE NEGATIVE TEMPERATURE COEFFICIENTS OR RESISTANCE (AS TEMPERATURE INCREASES RESISTANCE DECREASES)?	.0	.7
6 359	61-18 DO YOU USE OR REFER TO PN JUNCTION DIODE CHARACTERISTIC CURVES (PERHAPS YOU DO THIS TO IDENTIFY POINTS OF STRUCTURAL BREAKDOWN OR OPERATING REGIONS)?	.0	.0

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O TSK	TITLES	205 70 (M)	307 70 (M)
G 360	GI-19 DO YOU DETERMINE WHETHER PN JUNCTION DIODES ARE FORWARD BIASED OR REVERSE BIASED WHEN YOU READ OR INTERPRET CIRCUIT DIAGRAMS?	.0	.0
G 361	GI-20 DO YOU NEED AN UNDERSTANDING OF VALENCE BAND IN SEMICONDUCTOR MATERIALS?	.0	.0
G 362	GI-21 DO YOU NEED AN UNDERSTANDING OF FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS?	.0	.0
G 363	GI-22 DO YOU NEED AN UNDERSTANDING OF CONDUCTION BAND IN SEMICONDUCTOR MATERIALS?	.0	.0
G 364	GI-23 DO YOU NEED AN UNDERSTANDING OF CONVALENT BONDING IN SEMICONDUCTOR MATERIALS?	.0	.0
G 365	GI-24 DO YOU NEED AN UNDERSTANDING OF ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS?	.0	.0
G 366	GI-25 DO YOU NEED AN UNDERSTANDING OF ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS?	.0	.7
G 367	GI-26 DO YOU NEED AN UNDERSTANDING OF DONOR IMPURITY IN SEMICONDUCTORS?	.0	.0
G 368	GI-27 DO YOU NEED AN UNDERSTANDING OF ACCEPTOR IMPURITY IN SEMICONDUCTORS?	.0	.0
G 369	GI-28 DO YOU NEED AN UNDERSTANDING OF P-TYPE SEMICONDUCTOR MATERIAL?	.0	.0
G 370	GI-29 DO YOU NEED AN UNDERSTANDING OF N-TYPE SEMICONDUCTOR MATERIAL?	.0	.0
G 371	GI-30 DO YOU NEED AN UNDERSTANDING OF MAJORITY CARRIERS IN SEMICONDUCTORS?	.0	.0
G 372	GI-31 DO YOU NEED AN UNDERSTANDING OF MINORITY CARRIERS IN SEMICONDUCTORS?	.0	.0
G 373	GI-32 DO YOU NEED AN UNDERSTANDING OF JUNCTION RECOMBINATION IN SEMICONDUCTORS?	.0	.0
G 374	GI-33 DO YOU NEED AN UNDERSTANDING OF DEPLETION REGION IN SEMICONDUCTORS?	.0	.0

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205 307
70 70
(M) (M)

D TSM TITLES

G 375 G1-34 DO YOU NEED AN UNDERSTANDING OF RELATIONSHIP BETWEEN
BARRIER WIDTH AND DIFFERENCE OF POTENTIAL?
G 376 G1-35 DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT
RESISTANCE RATIO FOR DIODES?
G 377 G1-36 DO YOU USE OR REFER TO BARRIER HEIGHT IN
SEMICONDUCTORS?
G 378 G1-37 DO YOU USE OR REFER TO DIODE SUBSTITUTION
INFORMATION?
G 379 G1-38 DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD
CURRENT DIODE RATINGS?
G 380 G1-39 DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT
DIODE RATINGS?
G 381 G1-40 DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE
RATINGS?
G 382 G1-41 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE
DIODE RATINGS?
G 383 G2-1 DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB? IF
NO, GO TO ITEM G3-1; IF YES, CONTINUE.
G 384 G2-2 DO YOU INSPECT TRANSISTORS?
G 385 G2-3 DO YOU CHECK TRANSISTORS?
G 386 G2-4 DO YOU NEED AN UNDERSTANDING OF EMITTER - BASE (EB)
FORWARD AND REVERSE RESISTANCE MEASUREMENTS?
G 387 G2-5 DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD
AND REVERSE RESISTANCE MEASUREMENTS?
G 388 G2-6 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC)
RESISTANCE MEASUREMENTS?
G 389 G2-7 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE
PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION?
G 390 G2-8 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE
PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION?

0 TSM	TITLES	205 70 (M)	307 70 (M)
6 391 62-9	DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE TRANSISTOR STRUCTURE (COLLECTOR, BASE, AND EMITTER)?	.0	.7
6 392 62-10	DO YOU USE OR REFER TO LEAKAGE CURRENT (I SUB CBO) IN A TRANSISTOR?	.0	.7
6 393 62-11	DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS?	.0	1.4
6 394 62-12	DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS Q1, A2, A3, ETC.?	.0	.7
6 395 62-13	DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION INFORMATION?	.0	.7
6 396 62-14	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE TRANSISTOR BASE CURRENT (I SUB B) IS NORMALLY SIGNIFICANTLY SMALLER THAN THE EMITTER CURRENT (I SUB E) USUALLY (I SUB B) BEING 2 TO 8 PERCENT OF (I SUB E)?	.0	.7
6 397 62-15	DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR TRANSISTORS?	.0	.7
6 398 62-16	DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT (I SUB CBO) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES?	.0	.0
6 399 62-17	DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC CURVES?	.0	.0
6 400 62-18	DO YOU USE OR REFER TO BETA TRANSISTOR GAINS?	.0	.0
6 401 62-19	DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS?	.0	.0
6 402 62-20	DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS?	.0	.0
6 403 62-21	DO YOU USE OR REFER TO THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS BY DIVIDING THE BASE - EMITTER VOLTAGE INTO THE BASE COLLECTOR VOLTAGE (AV = VCB/VBE)?	.0	.0
6 404 62-22	DO YOU USE OR REFER TO THE CURRENT GAIN FOR SPECIFIC TRANSISTORS BY DIVIDING THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT (AI = IC/IB)?	.0	.0

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205 307
70 70
(M) (P)

D TSM TITLES

- G 405 62-23 DO YOU USE OR REFER TO THE POWER GAIN FOR SPECIFIC TRANSISTORS BY MULTIPLYING THE CURRENT GAIN TIMES THE VOLTAGE GAIN (AP = AI X AV)?
- G 406 62-24 DO YOU PERFORM TRANSISTOR MATCHING THROUGH THE USE OF CURVE TRACING?
- G 407 63-1 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM H1-1; IF YES, CONTINUE.
- G 408 63-2 DO YOU INSPECT TRANSISTOR AMPLIFIERS?
- G 409 63-3 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS?
- G 410 63-4 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL?
- G 411 63-5 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS?
- G 412 63-6 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER?
- G 413 63-7 DO YOU REMOVE OR REPLACE AMPLIFIER CIRCUIT COMPONENTS?
- G 414 63-8 DO YOU USE OR REFER TO THE CHANGE IN COLLECTOR CURRENT RESULTS FROM A CHANGE IN BASE CURRENT CONCERNING TRANSISTOR AMPLIFIERS?
- G 415 63-9 DO YOU USE OR REFER TO THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT CONCERNING TRANSISTOR AMPLIFIERS?
- G 416 63-10 DO YOU USE OR REFER TO THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT?
- G 417 63-11 DO YOU USE OR REFER TO THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL CONCERNING TRANSISTOR AMPLIFIERS?
- G 418 63-12 DO YOU USE OR REFER TO THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL CONCERNING TRANSISTOR AMPLIFIERS?

.0 .0
.0 .0
5.6 21.0
.0 7.0
.0 18.9
.0 14.0
.0 1.4
2.2 18.9
.0 1.4
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.0 .0

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KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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205 307
70 70
(M) (P)

D TSM TITLES

- G 419 G3-13 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)?
- G 420 G3-14 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR?
- G 421 G3-15 DO YOU MEASURE VOLTAGE GAIN CONCERNING TRANSISTOR AMPLIFIERS?
- G 422 G3-16 DO YOU MEASURE CURRENT GAIN CONCERNING TRANSISTOR AMPLIFIERS?
- G 423 G3-17 DO YOU MEASURE POWER GAIN CONCERNING TRANSISTOR AMPLIFIERS?
- G 424 G3-18 DO YOU USE OR REFER TO THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS BY DIVIDING THE CHANGE IN BASE - EMITTER VOLTAGE INTO THE CHANGE OF THE BASE COLLECTOR VOLTAGE?
- G 425 G3-19 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION?
- G 426 G3-20 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION?
- G 427 G3-21 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION?
- G 428 G3-22 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION?
- G 429 G3-23 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION?

.0 .7
.0 .0
1.1 9.1
1.1 4.9
1.1 15.4
.0 .0
.0 .0
.0 .0
.0 .0
.0 .0
.0 .0
.0 .0

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLES	205 70 (M)	307 70 (M)
G 430	G3-24 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS, WHILE TROUBLESHOOTING THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION?	.0	.0
G 431	G3-25 DO YOU IDENTIFY OR TROUBLESHOOT AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS?	.0	12.6
G 432	G3-26 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS?	.0	12.6
G 433	G3-27 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS?	.0	9.8
G 434	G3-28 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING EMITTER RESISTANCE FOR TRANSISTOR AMPLIFIERS?	.0	1.4
G 435	G3-29 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS?	.0	.0
G 436	G3-30 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS?	.0	.0
G 437	G3-31 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS?	.0	.7
G 438	G3-32 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS?	.0	.0
G 439	G3-33 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS?	.0	.7
G 440	G3-34 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS?	.0	2.1
G 441	G2-35 DO YOU TROUBLESHOOT OR REPAIR VOLTAGE MULTIPLIERS (DOUBLERS/TRIPLERS)?	.0	1.4
G 442	G3-36 DO YOU TROUBLESHOOT OR REPAIR RF AMPLIFIERS?	1.1	4.2
G 443	G3-37 DO YOU TROUBLESHOOT OR REPAIR WIDEBAND AMPLIFIERS (VIDEO AMPS)?	1.1	2.1
G 444	G3-38 DO YOU TROUBLESHOOT OR REPAIR AUDIO AMPLIFIERS?	1.1	15.4
G 445	G3-39 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL OR POWER AMPLIFIERS?	1.1	2.1
G 446	G3-40 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS?	.0	.0

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D TSM	TITLES	205 (P)	307 70 (P)
G 447 G3-41	DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY AMPLIFIERS?	.0	.0
G 448 G3-42	DO YOU TROUBLESHOOT OR REPAIR IF AMPLIFIERS?	.0	2.1
G 449 G3-43	DO YOU TROUBLESHOOT OR REPAIR DIFFERENTIATING AMPLIFIERS (DIFF AMPS)?	.0	.0
G 450 G3-44	DO YOU TROUBLESHOOT OR REPAIR OPERATIONAL AMPLIFIERS (OP AMPS)?	.0	1.4
G 451 G3-45	DO YOU TROUBLESHOOT OR REPAIR INTEGRATING AMPLIFIERS?	.0	1.4
G 452 G3-46	DO YOU TROUBLESHOOT OR REPAIR SUMMING AMPLIFIERS?	.0	.7

M	SOLID-STATE SPECIAL PURPOSE DEVICES (H1), POWER SUPPLIES (H2), OSCILLATORS (H3)	-----	
M 453 H1-1	DO YOU USE OR REFER TO VARACTORS/VARICAP COMPONENTS?	1.1	4.9
M 454 H1-2	DO YOU USE OR REFER TO TUNNEL DIODE COMPONENTS?	1.1	6.3
M 455 H1-3	DO YOU USE OR REFER TO FIELD EFFECT TRANSISTOR (FET) COMPONENTS?	2.2	5.6
M 456 H1-4	DO YOU USE OR REFER TO UNIJUNCTION TRANSISTOR COMPONENTS?	1.1	3.5
M 457 H1-5	DO YOU USE OR REFER TO ZENEP DIODE COMPONENTS?	1.1	8.4
M 458 H1-6	DO YOU USE OR REFER TO INTEGRATED CIRCUIT COMPONENTS?	10.1	16.8
M 459 H1-7	DO YOU USE OR REFER TO PIN DIODE COMPONENTS?	3.4	2.8
M 460 H1-8	DO YOU USE OR REFER TO LED'S/LCD'S COMPONENTS?	23.6	32.9
M 461 H1-9	DO YOU USE OR REFER TO FANTAIL TRANSISTOR COMPONENTS?	1.1	.0
M 462 H1-10	DO YOU USE OR REFER TO SILICON CONTROL RECTIFIER (SCR) COMPONENTS?	1.1	4.2
M 463 H1-11	DO YOU USE OR REFER TO TRIAC COMPONENTS?	1.1	2.8
M 464 H1-12	DO YOU USE OR REFER TO PROGRAMMABLE UNIJUNCTION TRANSISTOR (PUT) COMPONENTS?	1.1	.0

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 70 (M)	307 70 (P)
H 465	H1-13 DO YOU USE OR REFER TO SILICON CONTROLLED SWITCH (SCS) COMPONENTS?	1.1	2.1
H 466	H1-14 DO YOU USE OR REFER TO SILICON UNILATERAL SWITCH (SUS) COMPONENTS?	1.1	2.1
H 467	H2-1 IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES? IF NO, GO TO ITEM H3-1; IF YES, CONTINUE.	1.1	28.0
H 468	H2-2 DO YOU INSPECT POWER SUPPLIES?	.0	12.6
H 469	H2-3 DO YOU CLEAN POWER SUPPLIES?	.0	7.0
H 470	H2-4 DO YOU ALIGN OR ADJUST POWER SUPPLIES?	.0	11.2
H 471	H2-5 DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL?	.0	14.7
H 472	H2-6 DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS?	.0	1.4
H 473	H2-7 DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES?	.0	14.0
H 474	H2-8 DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS?	.0	.0
H 475	H2-9 DO YOU INSPECT OR SERVICE COOLANT LEVELS?	.0	.7
H 476	H2-10 DO YOU WORK WITH HALF-WAVE RECTIFIERS?	.0	2.1
H 477	H2-11 DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN BRIDGE RECTIFIERS?	.0	3.5
H 478	H2-12 DO YOU WORK WITH BRIDGE RECTIFIERS?	.0	4.2
H 479	H2-13 DO YOU WORK WITH THREE-PHASE RECTIFIERS?	.0	.0
H 480	H2-14 DO YOU USE OR REFER TO INPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	.0	9.8
H 481	H2-15 DO YOU USE OR REFER TO INPUT FREQUENCIES IN YOUR WORK WITH RECTIFIERS?	.0	11.2
H 482	H2-16 DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	.0	10.5
H 483	H2-17 DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	.0	9.8
H 484	H2-18 DO YOU USE OR REFER TO RIPPLE AMPLITUDE IN YOUR WORK WITH RECTIFIERS?	.0	7.0
H 485	H2-19 DO YOU USE OR REFER TO RIPPLE FREQUENCIES IN YOUR WORK WITH RECTIFIERS?	.0	7.0

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 (M)	307 70 (M)
H 486	H2-20 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGES IN YOUR WORK WITH RECTIFIERS?	.0	1.4
H 487	H2-21 DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS IN YOUR WORK WITH RECTIFIERS?	.0	9.8
H 488	H2-22 DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGES IN YOUR WORK WITH RECTIFIERS?	.0	7.0
H 489	H2-23 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE FILTERS?	.0	4.9
H 490	H2-24 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE FILTERS?	.0	4.9
H 491	H2-25 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE INPUT L-TYPE FILTERS?	.0	3.5
H 492	H2-26 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE INPUT L-TYPE FILTERS?	.0	3.5
H 493	H2-27 DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE FILTERS?	.0	3.5
H 494	H2-28 DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE FILTERS?	.0	3.5
H 495	H2-29 DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF FILTER WITH A DIFFERENT TYPE FILTER?	.0	1.4
H 496	H2-30 DO YOU WORK WITH POWER SUPPLY REGULATOR CIRCUITS OTHER THAN SOLID-STATE?	.0	4.2
H 497	H2-31 DO YOU WORK WITH SOLID-STATE POWER SUPPLY REGULATOR CIRCUITS?	.0	5.6
H 498	H3-1 DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 11-1; IF YES, CONTINUE.	21.3	48.3
H 499	H3-2 DO YOU INSPECT OSCILLATORS?	3.4	16.1
H 500	H3-3 DO YOU ALIGN OR ADJUST OSCILLATORS?	5.6	28.7
H 501	H3-4 DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS?	4.5	16.8
H 502	H3-5 DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS?	.0	.7
H 503	H3-6 DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL?	.0	13.3

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D TSM	TITLES	205	307
		70	70
		(M)	(M)
M 504	M3-7 DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS?	.0	1.4
M 505	M3-8 DO YOU USE OR REFER TO FEEDBACK (DEGENERATIVE OR REGENERATIVE)?	5.6	16.1
M 506	M3-9 DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FDD)?	5.6	9.8
M 507	M3-10 DO YOU USE OR REFER TO AMPLITUDE STABILITY?	10.1	26.6
M 508	M3-11 DO YOU USE OR REFER TO FREQUENCY STABILITY?	15.7	30.1
M 509	M3-12 DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT (CRYSTAL OSCILLATIONS)?	5.6	3.5
M 510	M3-13 DO YOU USE OR REFER TO HARMONIC DISTORTION?	12.4	39.2
M 511	M3-14 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN DC TANK CIRCUITS?	1.1	4.2
M 512	M3-15 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN RC NETWORKS?	1.1	4.9
M 513	M3-16 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN CRYSTALS?	7.9	8.4
M 514	M3-17 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN PHASE LOCK LOOPS (PLL)?	11.2	6.3
M 515	M3-18 DO YOU WORK WITH OSCILLATORS WHICH CONTAIN - DON'T KNOW WHICH TYPE OF FDD?	4.5	21.7
M 516	M3-19 DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS?	.0	1.4
M 517	M3-20 DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS?	.0	1.4
M 518	M3-21 DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS?	.0	2.1
M 519	M3-22 DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS?	.0	.0
M 520	M3-23 DO YOU WORK WITH VOLTAGE CONTROL SINUSOIDAL OSCILLATORS?	4.5	5.6
M 521	M3-24 DO YOU WORK WITH CRYSTAL SINUSOIDAL OSCILLATORS?	9.0	9.8
M 522	M3-25 DO YOU WORK WITH VOLTAGE CONTROL OSCILLATORS (VCO) SINUSOIDAL OSCILLATORS?	11.2	8.4

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D TSM	TITLES	205 70 (M)	307 70 (M)
M 523 H3-26	DO YOU WORK WITH WIEN BRIDGE OSCILLATORS SINUSOIDAL OSCILLATORS?	.0	2.8
M 524 H3-27	DO YOU WORK WITH - DON'T KNOW WHICH TYPE OF SINUSOIDAL OSCILLATOR?	7.9	25.9
M 525 H3-28	DO YOU WORK WITH PULSE GENERATING CIRCUITS?	14.6	9.8
M 526 H3-29	DO YOU WORK WITH BLOCKING OSCILLATORS?	2.2	2.8
M 527 H3-30	DO YOU WORK WITH BURST GENERATORS?	1.1	2.1
M 528 H3-31	DO YOU WORK WITH BLOCKED OSCILLATORS?	.0	2.8

 I MULTIVIBRATORS (11), LIMITERS AND CLAMPERS (12), ELECTRON TUBES (13)

I 529 I1-1	DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM I2-1; IF YES, CONTINUE.	1.1	.7
I 530 I1-2	DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK CIRCUIT FREQUENCY DETERMINING DEVICES (FDD)?	.0	.0
I 531 I1-3	DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC NETWORK FREQUENCY DETERMINING DEVICES (FDD)?	.0	.0
I 532 I1-4	DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTAL FREQUENCY DETERMINING DEVICES (FDD)?	.0	.0
I 533 I1-5	DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN - DON'T KNOW WHICH TYPE OF FDD?	.0	.0
I 534 I1-6	DO YOU WORK WITH ASTABLE (FREE RUNNING) MULTIVIBRATORS?	.0	.0
I 535 I1-7	DO YOU WORK WITH MONOSTABLE (ONE SHOT) MULTIVIBRATORS?	.0	.0
I 536 I1-8	DO YOU WORK WITH BISTABLE (FLIP FLOP) MULTIVIBRATORS?	.0	.0
I 537 I1-9	DO YOU WORK WITH R-S FLIP-FLOP INTEGRATED CIRCUIT REGULATORS?	.0	.0

MEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 70 (M)	307 70 (P)
I 538	11-10 DO YOU WORK WITH J-K FLIP-FLOP INTEGRATED CIRCUIT REGULATORS?	.0	.0
I 539	11-11 DO YOU WORK WITH "O" FLIP-FLOP INTEGRATED CIRCUIT REGULATORS?	.0	.0
I 540	12-1 DO YOU WORK WITH LIMITERS OR CLAMPERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 13-1; IF YES, CONTINUE.	3.4	4.2
I 541	12-2 DO YOU WORK WITH SERIES DIODE LIMITERS?	.0	2.1
I 542	12-3 DO YOU WORK WITH SHUNT DIODE LIMITERS?	.0	3.5
I 543	12-4 DO YOU WORK WITH LIMITERS WITH BIAS?	.0	.7
I 544	12-5 DO YOU WORK WITH ZENER DIODE LIMITERS?	.0	2.8
I 545	12-6 DO YOU WORK WITH TRANSISTOR LIMITERS?	.0	1.4
I 546	12-7 DO YOU WORK WITH TRIODE LIMITERS?	.0	.0
I 547	12-8 DO YOU WORK WITH BASIC DIODE CLAMPING CIRCUITS?	.0	1.4
I 548	12-9 DO YOU WORK WITH BIAS DIODE CLAMPING CIRCUITS?	.0	.0
I 549	12-10 DO YOU WORK WITH DC RESTORERS (DCR)?	1.1	.0
I 550	13-1 IN YOUR PRESENT JOB, DO YOU WORK ON EQUIPMENT WHICH CONTAINS BASIC ELECTRON TUBES (FOR PURPOSES OF THIS QUESTION DO NOT CONSIDER HIGH-FREQUENCY DEVICES SUCH AS KLYSTRONS, TRAVELING WAVE TUBES, BACKWARD WAVE OSCILLATORS, OR MAGNETRONS AS ELECTRON TUBES)? IF NO, GO TO ITEM 13-1; IF YES, CONTINUE.	2.2	2.1
I 551	13-2 DO YOU CHECK THE CONDITION OF ELECTRON TUBES?	.0	.7
I 552	13-3 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES?	.0	.7
I 553	13-4 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES?	.0	.0
I 554	13-5 DO YOU USE SCOPES TO CHECK ELECTRON TUBES?	1.1	.0
I 555	13-6 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES?	.0	.7
I 556	13-7 DO YOU USE OR REFER TO CUTOFF?	.0	.0
I 557	13-8 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING?	.0	.0
I 558	13-9 DO YOU USE OR REFER TO PEAK CURRENT RATING?	.0	.0
I 559	13-10 DO YOU USE OR REFER TO TRANSIT TIME?	.0	.0
I 560	13-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING?	.0	.0

D TSM	TITLES	205 70 (M)	307 70 (M)
I 561	13-12 DO YOU USE OR REFER TO SATURATION?	.0	.0
I 562	13-13 DO YOU USE OR REFER TO DC PLATE RESISTANCE?	.0	.0
I 563	13-14 DO YOU USE OR REFER TO PLATE VOLTAGE?	.0	.0
I 564	13-15 DO YOU USE OR REFER TO PLATE CURRENT?	.0	.0
I 565	13-16 DO YOU USE OR REFER TO GRID VOLTAGE?	.0	.0
I 566	13-17 DO YOU USE OR REFER TO GRID CURRENT?	.0	.0
I 567	13-18 DO YOU USE OR REFER TO CATHODE VOLTAGE?	.0	.0
I 568	13-19 DO YOU USE OR REFER TO CATHODE CURRENT?	.0	.0
I 569	13-20 DO YOU USE OR REFER TO FILAMENT VOLTAGE?	.0	.0
I 570	13-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)?	.0	.0
I 571	13-22 DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE, ETC.) AMPLIFICATION FACTORS?	.0	.0
I 572	13-23 DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE (G _m WHICH IS MEASURED IN MHOS)?	.0	.0
I 573	13-24 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER CALLED AC PLATE RESISTANCE?	.0	.0
I 574	13-25 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE CAPACITANCE?	.0	.0
I 575	13-26 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR WORK WITH ELECTRON TUBES?	.0	.0
I 576	13-27 DO YOU USE OR REFER TO PLATE VOLTAGE FOR A SPECIFIED BIAS?	.0	.0
I 577	13-28 DO YOU USE OR REFER TO PLATE CURRENT FOR A SPECIFIED BIAS?	.0	.0
I 578	13-29 DO YOU USE OR REFER TO BIAS REQUIRED FOR CUTOFF?	.0	.0
I 579	13-30 DO YOU USE OR REFER TO BIAS REQUIRED FOR SATURATION?	.0	.0
I 580	13-31 DO YOU USE OR REFER TO GAIN?	.0	.0
I 581	13-32 DO YOU USE OR REFER TO EFFICIENCY?	.0	.0

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205 307
70 70
(M) (M)

D TSK TITLES

I 502 I3-33 DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE
AMPLIFIER GAIN? .0 .0
I 503 I3-34 DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE
AMPLIFIER GAIN? .0 .0
I 504 I3-35 DO YOU USE CHARACTERISTIC CURVES TO DETERMINE
ELECTRON TUBE AMPLIFIER GAIN? .0 .0
I 505 I3-36 DO YOU USE OR REFER TO TUBE SOCKET NOTATION? .0 .0
I 506 I3-37 DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS? .0 .0
I 507 I3-38 DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL
SUCH AS MANUALS OR CHARTS? .0 .0
I 508 I3-39 DO YOU USE OR REFER TO ELECTRON TUBE DIODES? .0 .0

J ELECTRON TUBE AMPLIFIERS AND CIRCUITS (J1), SPECIAL PURPOSE
ELECTRON TUBES (J2), HETERODYNING AND MODULATION -
DEMULATION (MODEMS) (J3)

J 509 J1-1 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS
IN YOUR PRESENT JOB? IF NO, GO TO ITEM J2-1; IF YES,
CONTINUE.

J 590 J1-2 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON
TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER
CIRCUITS? .0 .0

J 591 J1-3 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS? .0 .0

J 592 J1-4 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS? 1.1 .7

J 593 J1-5 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED
AMPLIFIERS? .0 .0

J 594 J1-6 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED
AMPLIFIERS? .0 .7

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSM	TITLES	205 (M)	307 70 (M)
J 595 J1-7	DO YOU TROUBLESHOOT OR REPAIR - DON'T KNOW WHICH TYPE OF AMPLIFIER?	3.4	.0
J 596 J2-1	DO YOU WORK WITH GAS TUBES (HOT CATHODE OR COLD CATHODE)?	2.2	2.1
J 597 J2-2	DO YOU WORK WITH CATHODE-RAY TUBES (CRT)?	68.5	35.7
J 598 J2-3	DO YOU WORK WITH BEAM POWER TUBES?	1.1	3.5
J 599 J2-4	DO YOU WORK WITH THYRATONS?	2.2	1.4
J 600 J2-5	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)?	22.5	7.7
J 601 J2-6	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)?	19.1	6.3
J 602 J2-7	DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)?	15.7	4.2
J 603 J2-8	DO YOU USE OR REFER TO PHOSPHOR SCREENS CONCERNING CRT'S?	37.1	11.9
J 604 J2-9	DO YOU USE OR REFER TO AQUADAG COATINGS CONCERNING CRT'S?	15.7	2.8
J 605 J2-10	DO YOU USE OR REFER TO ELECTRON OPTICS CONCERNING CRT'S?	14.6	2.8
J 606 J2-11	DO YOU USE OR REFER TO PERSISTENCE CONCERNING CRT'S?	31.5	8.4
J 607 J2-12	DO YOU USE OR REFER TO DECAY TIMES CONCERNING CRT'S?	28.1	7.7
J 608 J2-13	DO YOU USE OR REFER TO FLOURESCENCE CONCERNING CRT'S?	24.7	4.9
J 609 J2-14	DO YOU USE OR REFER TO PHOSPHORESCENCE CONCERNING CRT'S?	25.8	5.6
J 610 J2-15	DO YOU USE OR REFER TO SHADOW MASK CONCERNING CRT'S?	3.4	1.4
J 611 J3-1	DO YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM K1-1; IF YES, CONTINUE.	13.5	56.6
J 612 J3-2	DO YOU PERFORM TASKS ON FREQUENCY CONVERTER SYSTEMS STAGES?	7.9	23.8

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205 307
70 70
(M) (M)

D TSM TITLES

J 613 J3-3 DO YOU PERFORM TASKS ON FREQUENCY MIXER SYSTEMS
STAGES? 7.9 14.7
J 614 J3-4 DO YOU PERFORM TASKS ON MODEM SYSTEMS STAGES? 3.4 49.7
J 615 J3-5 DO YOU USE OR REFER TO THE HETERODYNING OF SIGNALS IN
YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS? 7.9 25.9
J 616 J3-6 DO YOU PERFORM TASKS ON REACTANCE MODULATOR SYSTEM
STAGES? .0 2.8
J 617 J3-7 DO YOU PERFORM TASKS ON MODULATED OSCILLATOR SYSTEM
STAGES? 1.1 7.0

K AM SYSTEMS (K1), FM SYSTEMS (K2), NUMBERING SYSTEMS (K3)

K 618 K1-1 DO YOU WORK ON AM TRANSMIT OR RECEIVE SYSTEMS IN YOUR
PRESENT JOB? IF NO, GO TO ITEM K2-1: IF YES, CONTINUE. 12.4 18.9
K 619 K1-2 DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS? 3.4 7.7
K 620 K1-3 DO YOU CLEAN AM TRANSMIT OR RECEIVE SYSTEMS? .0 2.8
K 621 K1-4 DO YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS? 2.2 6.3
K 622 K1-5 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS? .0 16.8
K 623 K1-6 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE
COMPONENTS? .0 6.3
K 624 K1-7 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE
SYSTEMS? 1.1 4.9
K 625 K1-8 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE
COMPONENTS? .0 2.1
K 626 K1-9 DO YOU PERFORM TASKS ON RF OSCILLATORS/SYNTHESIZERS? 5.6 2.8
K 627 K1-10 DO YOU PERFORM TASKS ON RF AMPLIFIERS? 5.6 3.5
K 628 K1-11 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS? 7.9 7.0
K 629 K1-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS? 4.5 4.9
K 630 K1-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS? 6.7 5.6

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205 307
70 70
(M) (M)

D TSK TITLES

K 631 K1-14 DO YOU PERFORM TASKS ON IF AMPLIFIERS?
K 632 K1-15 DO YOU PERFORM TASKS ON DETECTORS?
K 633 K1-16 DO YOU PERFORM TASKS ON MIXER AMPLIFIERS?
K 634 K1-17 DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN TRANSMITTERS?
K 635 K1-18 DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN TRANSMITTERS?
K 636 K1-19 DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS?
K 637 K1-20 DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS?
K 638 K2-1 DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM K3-1; IF YES, CONTINUE.
K 639 K2-2 DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS?
K 640 K2-3 DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS?
K 641 K2-4 DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS?
K 642 K2-5 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE SYSTEMS?
K 643 K2-6 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE COMPONENTS?
K 644 K2-7 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE SYSTEMS?
K 645 K2-8 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE COMPONENTS?
K 646 K2-9 DO YOU PERFORM LINK PERFORMANCE ASSESSMENTS?
K 647 K2-10 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS?
K 648 K2-11 DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS?
K 649 K2-12 DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)?
K 650 K2-13 DO YOU PERFORM TASKS ON POWER AMPLIFIERS?
K 651 K2-14 DO YOU PERFORM TASKS ON RF AMPLIFIERS?
K 652 K2-15 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS?
K 653 K2-16 DO YOU PERFORM TASKS ON IF AMPLIFIERS?

11.2 11.9
10.1 9.1
10.1 37.1

3.4 15.4
.0 7.0
1.1 12.6
.0 32.9
.0 14.7

1.1 6.3

.0 4.9

.0 30.8
5.6 13.3
1.1 7.0
3.4 6.3

2.2 9.8
3.4 8.4
5.6 7.0
5.6 6.3

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSK	TITLES	205 (M)	307 70 (M)
M 654	K2-17 DO YOU PERFORM TASKS ON LIMITERS?	2.2	7.0
M 655	K2-18 DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS?	4.5	7.0
M 656	K2-19 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSMITTERS?	.0	11.2
M 657	K2-20 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM RECEIVERS?	.0	11.9
M 658	K2-21 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSCIEVERS?	.0	7.7
M 659	K2-22 DO YOU PLOT RECEIVE SIGNAL LEVEL CURVES (RSL)?	.0	18.2
M 660	K3-1 DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL (BASE 8) NUMBERS?	21.3	7.7
M 661	K3-2 DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2) NUMBERS?	37.1	19.6
M 662	K3-3 DO YOU CONVERT DECIMAL NUMBERS TO HEXADECIMAL (BASE 16) NUMBERS?	13.5	7.0
M 663	K3-4 DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS?	20.2	9.1
M 664	K3-5 DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS?	20.2	7.7
M 665	K3-6 DO YOU CONVERT OCTAL NUMBERS TO HEXADECIMAL NUMBERS?	11.2	4.9
M 666	K3-7 DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS?	37.1	19.6
M 667	K3-8 DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS?	18.0	7.7
M 668	K3-9 DO YOU CONVERT BINARY NUMBERS TO HEXADECIMAL NUMBERS?	13.5	6.3
M 669	K3-10 DO YOU CONVERT HEXADECIMAL NUMBERS TO DECIMAL NUMBERS?	13.5	7.0
M 670	K3-11 DO YOU CONVERT HEXADECIMAL NUMBERS TO OCTAL NUMBERS?	11.2	4.9
M 671	K3-12 DO YOU CONVERT HEXADECIMAL NUMBERS TO BINARY NUMBERS?	13.5	7.0
M 672	K3-13 DO YOU ADD BINARY NUMBERS?	22.5	15.4
M 673	K3-14 DO YOU SUBTRACT BINARY NUMBERS USING THE END-AROUND-CARRY METHOD?	9.0	6.3
M 674	K3-15 DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT SUBTRACTION METHOD?	13.5	12.6
M 675	K3-16 DO YOU ADD OCTAL NUMBERS?	14.6	5.6

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSK	TITLES	205 70 (M)	307 70 (M)
K 676	K3-17 DO YOU SUBTRACT OCTAL NUMBERS?	12.4	5.6
K 677	K3-18 DO YOU ADD HEXADECIMAL NUMBERS?	9.0	2.1
K 678	K3-19 DO YOU SUBTRACT HEXADECIMAL NUMBERS?	9.0	2.1
K 679	K3-20 DO YOU DIVIDE BINARY NUMBERS?	9.0	7.7
K 680	K3-21 DO YOU MULTIPLY BINARY NUMBERS?	9.0	7.7
K 681	K3-22 DO YOU USE OR REFER TO BINARY CODED DECIMAL (BCD)?	29.2	18.2
K 682	K3-23 DO YOU USE OR REFER TO GRAY CODE?	2.2	4.2
K 683	K3-24 DO YOU USE OR REFER TO ICAD CODE?	3.4	2.1
K 684	K3-25 DO YOU USE OR REFER TO EXCESS-3 CODE?	2.2	.7

L	LOGIC FUNCTIONS (L1), BOOLEAN EQUATIONS (L2), COUNTERS (L3)		

L 685	L1-1 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS? IF NO, GO TO ITEM L2-1; IF YES, CONTINUE.	2.2	1.4
L 686	L1-2 DO YOU CONSTRUCT TRUTH TABLES FOR 'AND' LOGIC SYMBOLS OR GATES?	.0	.7
L 687	L1-3 DO YOU CONSTRUCT TRUTH TABLES FOR 'OR' LOGIC SYMBOLS OR GATES?	.0	.7
L 688	L1-4 DO YOU CONSTRUCT TRUTH TABLES FOR 'AND' OR 'OR' LOGIC SYMBOLS WITH STATE INDICATORS?	.0	.7
L 689	L1-5 DO YOU CONSTRUCT TRUTH TABLES FOR 'EXCLUSIVE OR' LOGIC SYMBOLS OR GATES?	1.1	.7
L 690	L1-6 DO YOU USE OR REFER TO TRUTH TABLES FOR 'AND' LOGIC SYMBOLS OR GATES?	.0	.7
L 691	L1-7 DO YOU USE OR REFER TO TRUTH TABLES FOR 'OR' LOGIC SYMBOLS OR GATES?	.0	.7
L 692	L1-8 DO YOU USE OR REFER TO TRUTH TABLES FOR 'AND' OR 'OR' LOGIC SYMBOLS WITH STATE INDICATORS?	.0	.0

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D TSM	TITLES	205 (M)	307 70 (M)
L 693	L1-9 DO YOU USE UP REFER TO TRUTH TABLES FOR 'EXCLUSIVE OR' LOGIC SYMBOLS?	.0	.7
L 694	L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'AND' GATES?	.0	.7
L 695	L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'OR' GATES?	.0	.7
L 696	L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'NAND' OR 'NOR' GATES?	.0	.7
L 697	L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR 'EXCLUSIVE OR' GATES?	1.1	.7
L 698	L1-14 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR INHIBITED 'AND' GATES?	.0	.7
L 699	L1-15 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR "B" BARS?	.0	.0
L 700	L1-16 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR "M" BARS?	.0	.0
L 701	L1-17 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR COMBINERS?	.0	.0
L 702	L1-18 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS?	.0	.7
L 703	L1-19 DO YOU USE OR REFER TO ONE-SHOT MULTIVIBRATOR SYMBOLS?	.0	.0
L 704	L1-20 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT OR SCHEMATIC DIAGRAMS?	.0	.7
L 705	L1-21 DO YOU USE OR REFER TO ONE-SHOT CIRCUIT OR SCHEMATIC DIAGRAMS?	.0	.0
L 706	L1-22 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES?	.0	.0
L 707	L1-23 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS?	.0	.0
L 708	L1-24 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS?	.0	.0
L 709	L1-25 DO YOU USE OR REFER TO NONCOMPLEMENTED FLIP-FLOP LOGIC SYMBOLS?	.0	.0
L 710	L1-26 DO YOU CONSTRUCT TRUTH TABLES FOR "B" BARS?	.0	.0
L 711	L1-27 DO YOU CONSTRUCT TRUTH TABLES FOR "M" BARS?	.0	.0
L 712	L1-28 DO YOU CONSTRUCT TRUTH TABLES FOR COMBINERS?	.0	.0

MEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 70 (M)	307 70 (M)
L 713 L1-29	DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS?	.0	.0
L 714 L1-30	DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS?	.0	.7
L 715 L1-31	DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS?	.0	.7
L 716 L1-32	DO YOU TRACE DATA FLOW THROUGH NONCOMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS?	.0	.7
L 717 L1-33	DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS?	.0	.0
L 718 L2-1	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS? IF NO, GO TO ITEM L3-1; IF YES, CONTINUE.	1.1	1.4
L 719 L2-2	DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS?	.0	.0
L 720 L2-3	DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS?	.0	.0
L 721 L2-4	DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS?	.0	1.4
L 722 L2-5	DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES?	.0	.0
L 723 L2-6	DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS?	.0	.7
L 724 L2-7	DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA?	.0	.7
L 725 L2-8	DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES?	.0	.0
L 726 L2-9	DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE L JIC (CML) CIRCUITS?	.0	.0
L 727 L2-10	DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE?	.0	.0
L 728 L2-11	DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS?	.0	.7

Q YSK	TITLES	205 70 (M)	307 70 (M)
L 729	L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS?	.0	.7
L 730	L3-1 DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M1-1; IF YES, CONTINUE.	12.4	9.8
L 731	L3-2 DO YOU USE OR REFER TO UP-COUNTERS?	4.5	4.9
L 732	L3-3 DO YOU USE OR REFER TO DOWN-COUNTERS?	4.5	.7
L 733	L3-4 DO YOU USE OR REFER TO SERIAL COUNTERS?	3.4	2.1
L 734	L3-5 DO YOU USE OR REFER TO PARALLEL COUNTERS?	2.2	2.8
L 735	L3-6 DO YOU USE OR REFER TO RING COUNTERS?	1.1	.7
L 736	L3-7 DO YOU USE OR REFER TO DECADE (MOD 10) COUNTERS?	4.5	1.4
L 737	L3-8 DO YOU USE OR REFER TO COUNT DETECT CIRCUITS?	.0	2.8
L 738	L3-9 DO YOU USE OR REFER TO DOWN CLOCKS?	1.1	1.4
L 739	L3-10 DO YOU USE OR REFER TO UP CLOCKS?	1.1	2.1
L 740	L3-11 DO YOU USE OR REFER TO OTHER MODULOUS COUNTERS?	3.4	3.5
L 741	L3-12 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-COUNTERS?	1.1	.7
L 742	L3-13 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DOWN-COUNTERS?	1.1	.7
L 743	L3-14 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-DOWN COUNTERS?	1.1	.7
L 744	L3-15 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DECADE COUNTERS?	.0	.7
L 745	L3-16 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF RING COUNTERS?	.0	.7
L 746	L3-17 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF COUNTERS FEEDING STORAGE REGISTERS?	.0	.7
L 747	L3-18 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS?	1.1	.7
L 748	L3-19 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF COUNTERS?	1.1	2.8

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

205 307
70 70
(M) (M)

D TASK TITLES

L 749 L3-20 DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF
DECADE COUNTERS?
L 750 L3-21 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING
COUNTERS FOR SPECIFIC INPUT PULSES?
L 751 L3-22 DO YOU DETERMINE THE APPROPRIATE 'AND' GATE NECESSARY
IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT?

.0 .7
.0 .0
1.1 1.4

M TIMING CIRCUITS (M1), USE OF SIGNAL GENERATORS (M2), MOTORS
AND GENERATORS (M3)

M 752 M1-1 DO YOU WORK WITH SAWTOOTH WAVE GENERATOR TIMING
CIRCUITS?
M 753 M1-2 DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATOR TIMING
CIRCUITS?
M 754 M1-3 DO YOU WORK WITH PULSED OSCILLATOR TIMING CIRCUITS?
M 755 M1-4 DO YOU WORK WITH BLOCKING OSCILLATOR TIMING CIRCUITS?
M 756 M1-5 DO YOU WORK WITH MASTER SLAVE TIMING CIRCUITS?
M 757 M1-6 DO YOU USE OR REFER TO RISE TIME?
M 758 M1-7 DO YOU USE OR REFER TO FALL OR FLYBACK TIME?
M 759 M1-8 DO YOU USE OR REFER TO SWEEP TIME?
M 760 M1-9 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH
WAVEFORMS?
M 761 M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH
WAVEFORMS?
M 762 M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH
WAVEFORMS?
M 763 M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH
WAVEFORMS?

21.3 7.0
1.1 2.8
14.6 6.3
3.4 2.8
4.5 30.1
42.7 14.7
39.3 9.8
46.1 19.6
22.5 3.5
22.5 3.5
16.9 4.9
14.6 3.5

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205 307
70 70
(M) (M)

D TSK TITLES

21.3 67.8

15.7 60.8

4.5 26.6

1.1 15.4

.0 3.5

15.7 58.7

18.0 18.9

10.1 16.1

5.6 7.7

.0 13.3

3.4 53.8

2.2 18.2

16.9 6.3

3.4 16.1

2.2 4.9

.0 3.5

.0 2.1

.0 3.5

.0 1.4

.0 1.4

- M 764 M2-1 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M3-1; IF YES, CONTINUE.
- M 765 M2-2 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS?
- M 766 M2-3 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS?
- M 767 M2-4 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS?
- M 768 M2-5 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS?
- M 769 M2-6 DO YOU USE AUDIO SINE-WAVE GENERATORS?
- M 770 M2-7 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE?
- M 771 M2-8 DO YOU USE RF GENERATORS LESS THAN 1,000 MHZ?
- M 772 M2-9 DO YOU USE RF GENERATORS GREATER THAN 1,000 MHZ?
- M 773 M2-10 DO YOU USE WHITE NOISE GENERATORS?
- M 774 M2-11 DO YOU USE PATTERN GENERATORS?
- M 775 M2-12 DO YOU USE PSEUDO-RANDOM GENERATORS?
- M 776 M2-13 DO YOU USE TIME MARK GENERATORS?
- M 777 M2-14 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION GENERATORS?
- M 778 M3-1 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS, GENERATORS (SERVO), OR ALTERNATORS? IF NO, GO TO ITEM M1-1; IF YES, CONTINUE.
- M 779 M3-2 DO YOU INSPECT MOTORS?
- M 780 M3-3 DO YOU CLEAN OR LUBRICATE MOTORS?
- M 781 M3-4 DO YOU OPERATE MOTORS?
- M 782 M3-5 DO YOU REMOVE OR REPLACE COMPLETE MOTORS?
- M 783 M3-6 DO YOU REMOVE OR REPLACE MOTOR PARTS?

MEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLES	205	307	70	(M)	(M)
M 784	M3-7 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF MOTORS?	.0	2.1			
M 785	M3-8 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS?	.0	1.4			
M 786	M3-9 DO YOU PERFORM TASKS ON MOTOR FIELD COILS?	.0	.7			
M 787	M3-10 DO YOU PERFORM ANY TASKS ON MOTOR ARMATURES?	.0	.7			
M 788	M3-11 DO YOU PERFORM ANY TASKS ON MOTOR ROTORS?	.0	.7			
M 789	M3-12 DO YOU PERFORM ANY TASKS ON MOTOR BRUSHES?	.0	1.4			
M 790	M3-13 DO YOU PERFORM ANY TASKS ON MOTOR SLIP RINGS?	.0	1.4			
M 791	M3-14 DO YOU PERFORM ANY TASKS ON MOTOR COMMUTATORS?	.0	.7			
M 792	M3-15 DO YOU PERFORM ANY TASKS ON MOTOR POLE PIECES?	.0	1.4			
M 793	M3-16 DO YOU DETERMINE OR MEASURE FORCE OR TORQUE CREATED BY A MOTOR?	.0	.7			
M 794	M3-17 DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR?	.0	.0			
M 795	M3-18 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS?	.0	.0			
M 796	M3-19 DO YOU WORK WITH SYNCHRONOUS MOTORS?	.0	.7			
M 797	M3-20 DO YOU WORK WITH INDUCTION MOTORS?	.0	.0			
M 798	M3-21 DO YOU WORK WITH SPLIT-PHASE MOTORS?	.0	.0			
M 799	M3-22 DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS?	.0	.7			
M 800	M3-23 DO YOU WORK WITH SERVOS OR SYNCHROS MOTORS?	.0	.7			
M 801	M3-24 DO YOU WORK WITH SHADED-POLE MOTORS?	.0	.0			
M 802	M3-25 DO YOU INSPECT GENERATORS OR ALTERNATORS?	.0	4.2			
M 803	M3-26 DO YOU CLEAN OR LUBRICATE GENERATORS OR ALTERNATORS?	.0	1.4			
M 804	M3-27 DO YOU OPERATE GENERATORS OR ALTERNATORS?	.0	4.2			
M 805	M3-28 DO YOU REMOVE OR REPLACE COMPLETE GENERATORS OR ALTERNATORS?	.0	1.4			
M 806	M3-29 DO YOU REMOVE OR REPLACE GENERATOR, ALTERNATOR, OR PARTS?	.0	.7			

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPT04 PAGE 49

205 307
70 70
(M) (M)

D TSK TITLES

M 807 M3-30 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS OR ALTERNATORS?
M 808 M3-31 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS OR ALTERNATORS?

N METER MOVEMENTS (M1), SATURABLE REACTORS AND MAGNETIC AMPLIFIERS (M2), WAVESHAPING CIRCUITS (M3)

M 809 M1-1 DO YOU WORK WITH METERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M2-1; IF YES, CONTINUE.

M 810 M1-2 DO YOU CONSIDER THE FUNCTIONS OF PERMANENT MAGNET INTERNAL METER PARTS?

M 811 M1-3 DO YOU CONSIDER THE FUNCTIONS OF MOVING COIL INTERNAL METER PARTS?

M 812 M1-4 DO YOU CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS INTERNAL METER PARTS?

M 813 M1-5 DO YOU READ METER SCALES?

M 814 M1-6 DO YOU EXTEND THE RANGE OF AMMETERS?

M 815 M1-7 DO YOU EXTEND THE RANGE OF VOLTMETERS?

M 816 M1-8 DO YOU ZERO OHMMETERS?

M 817 M1-9 DO YOU ZERO AMMETERS?

M 818 M1-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLT)?

M 819 M1-11 DO YOU CONSIDER BALLASTIC RESPONSE OF METER MOVEMENTS?

M 820 M1-12 DO YOU CONSIDER OTHER METER MOVEMENTS?

M 821 M2-1 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB? IF NO, GO TO ITEM M3-1; IF YES, CONTINUE.

7.9 68.5

.0 10.5

.0 14.0

.0 9.8

7.9 69.2

.0 16.1

1.1 24.5

.0 45.5

.0 23.1

.0 22.4

.0 7.0

.0 18.9

1.1 .0

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSK	TITLES	205 70 (M)	307 70 (P)
N 822	N2-2 DO YOU INSPECT SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?	.0	.0
N 823	N2-3 DO YOU CLEAN SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?	.0	.0
N 824	N2-4 DO YOU ADJUST SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?	.0	.0
N 825	N2-5 DO YOU TROUBLESHOOT SATURABLE REACTORS OR MAGNETIC AMPLIFIERS?	.0	.0
N 826	N2-6 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS?	.0	.0
N 827	N2-7 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS?	.0	.0
N 828	N2-8 DO YOU USE OR REFER TO HYSTERESIS CURVES OR LOOPS?	.0	.0
N 829	N2-9 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SATURABLE REACTORS?	.0	.0
N 830	N2-10 DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SATURABLE REACTORS?	.0	.0
N 831	N2-11 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS FOR MAGNETIC AMPLIFIERS?	.0	.0
N 832	N2-12 DO YOU USE OR REFER TO SATURABLE REACTOR SCHEMATIC SYMBOLS?	.0	.0
N 833	N3-1 DO YOU WORK WITH WAVESHAPING CIRCUITS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 01-1; IF YES, CONTINUE.	22.5	6.3
N 834	N3-2 DO YOU USE OR REFER TO TRANSIENT INTERVALS (RISE TIME AND FALL TIME)?	21.3	3.5
N 835	N3-3 DO YOU USE OR REFER TO PULSE WIDTH (PW)?	23.6	4.9
N 836	N3-4 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)?	23.6	3.5
N 837	N3-5 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)?	23.6	3.5
N 838	N3-6 DO YOU USE OR REFER TO DIFFERENTIATING CIRCUITS?	5.6	.7

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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D TSM	TITLES	205 (M)	307 70 (M)
N 839	N3-7 DO YOU USE OR REFER TO INTEGRATING CIRCUITS?	5.6	1.4
N 840	N3-8 DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT?	3.4	.7
N 841	N3-9 DO YOU DETERMINE WHETHER AN LP OR RC CIRCUIT IS DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT AND OUTPUT CONFIGURATION?	1.1	.0
N 842	N3-10 DO YOU WORK WITH SQUARE WAVE GENERATOR SOLID STATE CIRCUITS?	14.6	4.9
N 843	N3-11 DO YOU WORK WITH RECTANGULAR WAVE GENERATOR SOLID STATE CIRCUITS?	6.7	.7
N 844	N3-12 DO YOU WORK WITH TRIANGULAR (SAWTOOTH) WAVE GENERATOR SOLID STATE CIRCUITS?	14.6	.7
N 845	N3-13 DO YOU WORK WITH RAMP (TRAPEZOIDAL) GENERATOR SOLID STATE CIRCUITS?	5.6	1.4
N 846	N3-14 DO YOU WORK WITH FUNCTION GENERATOR SOLID STATE CIRCUITS?	7.9	2.1
N 847	N3-15 DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS?	2.2	2.1
N 848	N3-16 DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING CIRCUITS?	2.2	1.4
N 849	N3-17 DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS?	1.1	1.4
N 850	N3-18 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS?	1.1	1.4
N 851	N3-19 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS?	1.1	1.4
N 852	N3-20 DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS?	1.1	.7
N 853	N3-21 DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS?	1.1	.0

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPT04 PAGE 52

205 307
70 70
(M) (M)

D TSK TITLES

0 SINGLE OR INDEPENDENT SIDEBAND SYSTEMS (01), PULSE
MODULATION SYSTEMS (02), ANTENNAS (03)

0 854 01-1 DO YOU WORK ON SINGLE OR INDEPENDENT SIDEBAND SYSTEMS
IN YOUR PRESENT JOB? IF NO, GO TO ITEM 02-1; IF YES,
CONTINUE.

0 855 01-2 DO YOU INSPECT SINGLE SIDE BAND (SSB) OR INDEPENDENT
SIDEBAND (ISB) TRANSMIT OR RECEIVE SYSTEMS?

0 856 01-3 DO YOU CLEAN SINGLE SIDE BAND (SSB) OR INDEPENDENT
SIDEBAND (ISB) TRANSMIT OR RECEIVE SYSTEMS?

0 857 01-4 DO YOU ALIGN SINGLE SIDE BAND (SSB) OR INDEPENDENT
SIDEBAND (ISB) TRANSMIT OR RECEIVE SYSTEMS?

0 858 01-5 DO YOU TROUBLESHOOT TO SINGLE SIDE BAND (SSB) OR
INDEPENDENT SIDEBAND (ISB) TRANSMIT OR RECEIVE SYSTEMS?

0 859 01-6 DO YOU TROUBLESHOOT TO SINGLE SIDE BAND (SSB) OR
INDEPENDENT SIDEBAND (ISB) TRANSMIT OR RECEIVE COMPONENTS?

0 860 01-7 DO YOU REMOVE OR REPLACE SINGLE SIDE BAND (SSB) OR
INDEPENDENT SIDEBAND (ISB) TRANSMIT OR RECEIVE SYSTEMS?

0 861 01-8 DO YOU REMOVE OR REPLACE SINGLE SIDE BAND (SSB) OR
INDEPENDENT SIDEBAND (ISB) TRANSMIT OR RECEIVE COMPONENTS?

0 862 01-9 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR RECEIVE
SYSTEM AUDIO AMPLIFIER STAGE?

0 863 01-10 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM BALANCED MODULATOR STAGE?

0 864 01-11 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM CARRIER OSCILLATOR STAGE?

0 865 01-12 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM LC FILTER STAGE?

0 866 01-13 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM CRYSTAL FILTER STAGE?

0 867 01-14 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM MECHANICAL FILTER STAGE?

0 868 01-15 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM OSCILLATOR STAGE?

0 869 01-16 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM MIXER STAGE?

0 870 01-17 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM DRIVER STAGE?

0 871 01-18 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM POWER AMPLIFIER STAGES?

0 872 01-19 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM RF AMPLIFIER STAGE?

0 873 01-20 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM FREQUENCY CONVERTER STAGES?

0 874 01-21 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM IF AMPLIFIER STAGE?

0 875 01-22 DO YOU PERFORM TASKS ON SSB OR ISB TRANSMIT OR
RECEIVE SYSTEM DEMODULATOR STAGE?

0 876 01-23 DO YOU USE OR REFER TO SELECTIVE FADING WHEN WORKING
WITH SSB TRANSMIT OR RECEIVE SYSTEMS?

5.6 19.6

.0 4.9

.0 2.1

.0 4.2

.0 18.9

.0 9.1

.0 3.5

.0 2.8

3.4 6.3

.0 1.4

2.2 2.8

.0 .7

1.1 .7

.0 1.4

3.4 2.1

2.2 1.4

.0 .7

1.1 2.1

2.2 1.4

2.2 2.8

3.4 1.4

4.5 2.8

.0 8.4

0 TSK	TITLES	205 (M)	307 (P)
0 877	01-24 DO YOU USE OR REFER TO PEAK POWER WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?	1.1	11.9
0 878	01-25 DO YOU USE OR REFER TO FREQUENCY STABILITY WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?	2.2	11.9
0 879	01-26 DO YOU USE OR REFER TO RESPONSE CURVES FOR BANDWIDTH FILTERS WHEN WORKING WITH SSB TRANSMIT OR RECEIVE SYSTEMS?	.0	2.8
0 880	01-27 DO YOU CALCULATE PEAK POWER OR EFFECTIVE POWER OF SSB OR ISB TRANSMITTERS?	1.1	2.0
0 881	01-28 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB OR ISB TRANSMITTER SCHEMATIC DIAGRAMS?	.0	2.8
0 882	01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB OR ISB RECEIVER SCHEMATIC DIAGRAMS?	.0	2.1
0 883	01-30 DO YOU PERFORM AERONAUTIC STATION ASSESSMENT PROGRAMS (ASAP)?	.0	2.1
0 884	02-1 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR PRESENT JOB? IF NO, GO TO ITEM 03-1; IF YES, CONTINUE.	14.6	17.5
0 885	02-2 DO YOU INSPECT PULSE MODULATION SYSTEMS?	2.2	7.0
0 886	02-3 DO YOU CLEAN PULSE MODULATION SYSTEMS?	1.1	2.1
0 887	02-4 DO YOU ALIGN PULSE MODULATION SYSTEMS?	.0	3.5
0 888	02-5 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS?	.0	14.0
0 889	02-6 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM COMPONENTS?	.0	6.3
0 890	02-7 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS?	.0	3.5
0 891	02-8 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM COMPONENTS?	.0	1.4
0 892	02-9 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM) PULSE MODULATION SYSTEMS?	5.6	11.9
0 893	02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM) PULSE MODULATION SYSTEMS?	6.7	1.4
0 894	02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM) PULSE MODULATION SYSTEMS?	7.9	2.8
0 895	02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) PULSE MODULATION SYSTEMS?	4.5	14.0
0 896	02-13 DO YOU WORK ON LINE PULSING MODULATION PULSE MODULATION SYSTEMS?	.0	.7
0 897	02-14 DO YOU WORK ON TIME DIVISION MULTIPLEXING (TDM) PULSE MODULATION SYSTEMS?	4.5	17.5
0 898	02-15 DO YOU WORK ON - DON'T KNOW WHICH TYPE OF MODULATION SYSTEM?	4.5	1.4
0 899	02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLY STAGE?	1.1	3.5
0 900	02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHOKES AND CHARGING DIODE STAGE?	1.1	.0
0 901	02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORK STAGE?	1.1	.7
0 902	02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMER STAGE?	2.2	1.4
0 903	02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATRON STAGE?	1.1	.0

NEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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0 TSK	TITLES	205 70 (M)	307 70 (M)
0 904	02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMER STAGE?	2.2	.0
0 905	02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBE STAGE?	1.1	.7
0 906	02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIER STAGE?	3.4	1.4
0 907	02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTER STAGE?	4.5	2.8
0 908	02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIER STAGE?	4.5	1.4
0 909	02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTOR STAGE?	3.4	.7
0 910	02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIER STAGE?	4.5	.7
0 911	02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIER STAGE?	2.2	.7
0 912	02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	14.6	2.8
0 913	02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	14.6	2.8
0 914	02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	14.6	6.3
0 915	02-32 DO YOU USE OR REFER TO PULSE SHAPE WHEN WORKING WITH PULSE MODULATION SYSTEMS?	13.5	4.9
0 916	02-33 DO YOU USE OR REFER TO PEAK POWER WHEN WORKING WITH PULSE MODULATION SYSTEMS?	13.5	7.7
0 917	02-34 DO YOU USE OR REFER TO AVERAGE POWER WHEN WORKING WITH PULSE MODULATION SYSTEMS?	12.4	5.6
0 918	02-35 DO YOU USE OR REFER TO DUTY CYCLE (DC) WHEN WORKING WITH PULSE MODULATION SYSTEMS?	13.5	3.5
0 919	02-36 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)?	13.5	.7
0 920	02-37 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)?	12.4	1.4
0 921	02-38 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS?	12.4	3.5
0 922	02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS?	1.1	3.5
0 923	02-40 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS?	.0	4.2
0 924	03-1 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB? IF NO, GO TO ITEM P1-1; IF YES, CONTINUE.	15.7	18.9
0 925	03-2 DO YOU INSPECT ANTENNAS?	2.2	4.9
0 926	03-3 DO YOU CLEAN ANTENNAS?	1.1	2.8
0 927	03-4 DO YOU PHYSICALLY ALIGN ANTENNAS?	1.1	2.1
0 928	03-5 DO YOU ELECTRICALLY ALIGN ANTENNAS?	1.1	2.1
0 929	03-6 DO YOU TROUBLESHOOT TO ANTENNAS?	1.1	13.3
0 930	03-7 DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS?	1.1	2.1
0 931	03-8 DO YOU REMOVE OR INSTALL ANTENNAS?	3.4	3.5

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSM	TITLES	205 70 (H)	307 70 (P)
0 932 03-9	DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS?	1.1	2.8
0 933 03-10	DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF E OR ELECTRIC FIELD LINES?	6.7	4.9
0 934 03-11	DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF H OR MAGNETIC FIELD LINES?	6.7	4.9
0 935 03-12	DO YOU DETERMINE THE DIRECTION OF THE MAGNETIC LINES IN RELATION TO THE ELECTRIC LINES OF FORCE FOR ANTENNAS?	5.6	2.1
0 936 03-13	DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE OF CORRECT LENGTH (HALF-WAVE) ACT AS RESISTIVE LOADS TO THE GENERATOR?	4.5	2.1
0 937 03-14	DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE LONGER THAN A HALF-WAVE ACT AS INDUCTIVE LOADS TO THE GENERATOR?	3.4	1.4
0 938 03-15	DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE SHORTER THAN A HALF-WAVE ACT AS CAPACITIVE LOADS TO THE GENERATOR?	3.4	1.4
0 939 03-16	DO YOU WORK WITH HERTZ BASIC ANTENNAS?	2.2	1.4
0 940 03-17	DO YOU WORK WITH MARCONI BASIC ANTENNAS?	.0	.7
0 941 03-18	DO YOU WORK WITH RHOMBIC BASIC ANTENNAS?	1.1	7.7
0 942 03-19	DO YOU WORK WITH DIPOLE BASIC ANTENNAS?	6.7	7.7
0 943 03-20	DO YOU WORK WITH SCIMITAR BASIC ANTENNAS?	1.1	.0
0 944 03-21	DO YOU WORK WITH PARABOLIC BASIC ANTENNAS?	7.9	12.6
0 945 03-22	DO YOU WORK WITH GROUND PLANE BASIC ANTENNAS?	1.1	3.5
0 946 03-23	DO YOU WORK WITH FOLDED DIPOLE BASIC ANTENNAS?	2.2	.7
0 947 03-24	DO YOU WORK WITH BROADSIDE ARRAYS?	3.4	2.1
0 948 03-25	DO YOU WORK WITH END-FIRE ARRAYS?	1.1	1.4
0 949 03-26	DO YOU WORK WITH CARDIOID ARRAYS?	1.1	.7
0 950 03-27	DO YOU WORK WITH COLLINER ARRAYS?	2.2	1.4
0 951 03-28	DO YOU WORK WITH PHASE ARRAYS?	5.6	3.5
0 952 03-29	DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC INDUCTION FIELDS WHEN WORKING WITH ANTENNAS?	6.7	1.4
0 953 03-30	DO YOU MEASURE ELECTROMAGNETIC INDUCTION FIELDS OF ANTENNAS?	2.2	.0
0 954 03-31	DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC RADIATION FIELDS WHEN WORKING WITH ANTENNAS?	9.0	4.2
0 955 03-32	DO YOU MEASURE ELECTROMAGNETIC RADIATION FIELDS OF ANTENNAS?	4.5	.0
0 956 03-33	DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA RADIATION?	4.5	.0
0 957 03-34	DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA INDUCTION FIELD?	3.4	.0
0 958 03-35	ARE ANY OF THE ANTENNAS YOU WORK ON LINEARLY POLARIZED?	9.0	2.1
0 959 03-36	ARE ANY OF THE ANTENNAS YOU WORK ON CIRCULARLY POLARIZED?	9.0	2.8
0 960 03-37	DO YOU MEASURE OR DETERMINE THE POLARITY OF ANTENNAS YOU WORK ON?	3.4	.7

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPTON PAGE 56

D TSM TITLES

0 961 03-38 DO YOU CONSTRUCT, OR MAKE THE CALCULATIONS NECESSARY TO CONSTRUCT ANTENNAS OF CORRECT LENGTH FOR SPECIFIC WAVELENGTHS?
 0 962 03-39 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS?
 0 963 03-40 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS?
 0 964 03-41 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN - DON'T KNOW WHAT KIND OF ELEMENT?
 0 965 03-42 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS?
 0 966 03-43 DO YOU WORK ON BIDIRECTIONAL ANTENNAS?
 0 967 03-44 DO YOU WORK ON OMNIDIRECTIONAL ANTENNAS?
 0 968 03-45 DO YOU WORK WITH ROTARY ANTENNA ARRAYS?

205 307
 70 70
 (M) (M)
 1.1 .7
 3.4 2.1
 4.5 1.4
 4.5 5.6
 6.7 13.3
 3.4 4.9
 12.4 9.1
 5.6 6.3

P TRANSMISSION LINES (P1), WAVEGUIDES AND CAVITY RESONATORS (P2), MICROWAVE AMPLIFIERS AND OSCILLATORS (P3)

P 969 P1-1 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES? (DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES.)
 IF NO, GO TO ITEM P2-1; IF YES, CONTINUE.
 P 970 P1-2 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE COPPER LOSS OR 'I SUB 2 R' LOSS IN TRANSMISSION LINES?
 P 971 P1-3 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN TRANSMISSION LINES?
 P 972 P1-4 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE RADIATION LOSS?
 P 973 P1-5 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE DIELECTRIC LOSS?
 P 974 P1-6 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE LEAKAGE LOSSES?
 P 975 P1-7 WHEN WORKING WITH TRANSMISSION LINES DO YOU REFER TO OR USE FARADAY SHIELD?
 P 976 P1-8 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES?
 P 977 P1-9 DO YOU WORK WITH TWIN LEAD TRANSMISSION LINES?
 P 978 P1-10 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES?
 P 979 P1-11 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION LINES?
 P 980 P1-12 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES?
 P 981 P1-13 DO YOU TROUBLESHOOT TRANSMISSION LINES?
 P 982 P1-14 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)?
 P 983 P1-15 DO YOU SELECT APPROPRIATE TRANSMISSION LINE TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS?

3.4 49.7
 1.1 7.7
 1.1 8.4
 1.1 12.6
 1.1 11.2
 1.1 13.3
 .0 1.4
 1.1 42.0
 1.1 19.6
 1.1 20.3
 2.2 32.9
 1.1 9.8
 .0 46.2
 .0 30.1
 .0 13.3

KEESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPTD4 PAGE 57

O TSK	TITLES	205 7C (M)	307 7C (M)
P 984	PI-16 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS?	.0	12.6
P 985	PI-17 DO YOU MEASURE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES?	.0	4.9
P 986	PI-18 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES?	.0	4.9
P 987	PI-19 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS?	.0	3.5
P 988	PI-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING MATCHING TRANSFORMERS?	1.1	19.6
P 989	PI-21 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING DELTA MATCHING?	.0	.7
P 990	PI-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES?	2.2	23.1
P 991	PI-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES?	.0	11.9
P 992	PI-24 DO YOU USE OR REFER TO THE TERM CUT OFF FREQUENCY OF TRANSMISSION LINES?	1.1	14.0
P 993	PI-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K) OF TRANSMISSION LINES?	.0	3.5
P 994	PI-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION LINES FOR PARTICULAR FREQUENCIES?	1.1	6.3
P 995	PI-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR ELECTRICAL LENGTHS FOR GIVEN FREQUENCIES?	.0	2.8
P 996	PI-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH INCREASES?	.0	4.9
P 997	PI-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION LINES?	.0	18.2
P 998	PI-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES?	1.1	12.6
P 999	PI-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING STUB MATCHING?	.0	2.1
P1000	PI-1 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN YOUR PRESENT JOB? IF NO, GO TO ITEM P3-1; IF YES, CONTINUE.	2.2	4.2
P1001	P2-2 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS?	.0	2.8
P1002	P2-3 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1003	P2-4 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS?	.0	1.4
P1004	P2-5 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS?	.0	.7
P1005	P2-6 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS?	.0	3.5
P1006	P2-7 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES?	.0	.7
P1007	P2-8 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS?	.0	2.1
P1008	P2-9 DO YOU REMOVE OR INSTALL DUMMY LOADS?	.0	4.2
P1009	P2-10 DO YOU REMOVE OR INSTALL E BENDS?	.0	.7
P1010	P2-11 DO YOU REMOVE OR INSTALL W BENDS?	.0	.7
P1011	P2-12 DO YOU REMOVE OR INSTALL OTHER BENDS?	.0	.7

KESLER ELECTRONIC PRINCIPLES INVENTORY DATA

FCPT04 PAGE 58

D TSK	TITLES	205 70 (M)	307 70 (P)
P1012	P2-13 DO YOU REMOVE OR INSTALL CHOKE JOINTS?	.0	.7
P1013	P2-14 DO YOU REMOVE OR INSTALL ROTATING JOINTS?	.0	.0
P1014	P2-15 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS?	.0	3.5
P1015	P2-16 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS?	.0	2.8
P1016	P2-17 DO YOU REMOVE OR INSTALL DUPLEXERS OR MIXERS?	.0	2.1
P1017	P2-18 DO YOU REMOVE OR INSTALL WAVEGUIDE SHUTTERS?	.0	.7
P1018	P2-19 DO YOU REMOVE OR INSTALL TRANSMIT (TR) OR ANTITRANSMIT (ATR) TUBES?	.0	.7
P1019	P2-20 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES?	.0	.7
P1020	P2-21 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES?	.0	.7
P1021	P2-22 DO YOU USE OR REFER TO CUT OFF FREQUENCY OF WAVEGUIDES?	1.1	4.2
P1022	P2-23 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES?	.0	2.1
P1023	P2-24 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES?	.0	2.1
P1024	P2-25 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS?	.0	1.4
P1025	P2-26 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS?	.0	.7
P1026	P2-27 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS?	.0	.0
P1027	P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OF .7 WAVELENGTHS OF THE OPERATING FREQUENCY?	.0	1.4
P1028	P2-29 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 AS AN AVERAGE?	.0	1.4
P1029	P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION?	.0	.7
P1030	P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES?	.0	.7
P1031	P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES?	.0	.7
P1032	P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES?	.0	.7
P1033	P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES?	.0	.7
P1034	P2-35 DO YOU WORK WITH HIGH POWER PROBE ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	.0	.0
P1035	P2-36 DO YOU WORK WITH LOW POWER PROBE ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	.0	2.8
P1036	P2-37 DO YOU WORK WITH LOOP ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	.0	1.4
P1037	P2-38 DO YOU WORK WITH APERTURES (WINDOWS OR IRISES) ENERGY COUPLING DEVICES ON WAVEGUIDES OR CAVITY RESONATORS?	.0	2.1
P1038	P2-39 DO YOU WORK WITH CHOKE JOINTS IN WAVEGUIDES OR CAVITY RESONATORS?	.0	.7

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ELECTRONIC PRINCIPLES INVENTORY KEESLER TECHNICAL
TRAINING CENTER(U) AIR FORCE OCCUPATIONAL MEASUREMENT
CENTER RANDOLPH AFB TX M THOMASSON APR 84

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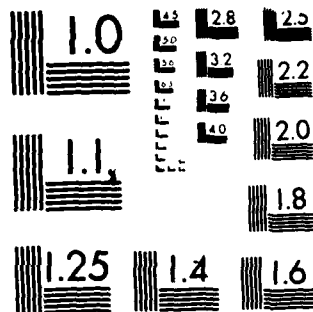
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

D TSM	TITLES	205 307		
		70	70	(M) (P)
P1039	P2-40 DO YOU WORK WITH ROTATING JOINTS IN WAVEGUIDES OR CAVITY RESONATORS?	.0	.0	
P1040	P2-41 DO YOU WORK WITH JOINTS IN WAVEGUIDES OR CAVITY RESONATORS BUT DON'T KNOW WHICH KIND?	1.1	2.1	
P1041	P2-42 DO YOU TUNE CAVITY RESONATORS USING ELECTRICAL METHODS?	.0	1.4	
P1042	P2-43 DO YOU TUNE CAVITY RESONATORS USING MECHANICAL METHODS?	.0	2.1	
P1043	P2-44 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY RESONATORS?	.0	2.0	
P1044	P3-1 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS, TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR MAGNETRONS? IF NO, GO TO ITEM DL-1. IF YES, CONTINUE.	4.5	5.6	
P1045	P3-2 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	1.1	1.4	
P1046	P3-3 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	1.1	1.4	
P1047	P3-4 DO YOU USE OR REFER TO LEAD INDUCTANCE FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	1.1	2.1	
P1048	P3-5 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL CIRCUITRY FACTORS THAT CAUSE POOR OPERATION OF CONVENTIONAL ELECTRON TUBES AT HIGH FREQUENCIES?	2.2	2.1	
P1049	P3-6 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY MODULATION?	2.2	1.4	
P1050	P3-7 DO YOU USE OR REFER TO ELECTRON BUNCHING?	2.2	2.1	
P1051	P3-8 DO YOU WORK WITH TWO-CAVITY KLYSTRONS?	1.1	.7	
P1052	P3-9 DO YOU WORK WITH THREE-CAVITY KLYSTRONS?	1.1	.7	
P1053	P3-10 DO YOU WORK WITH REFLEX KLYSTRONS?	1.1	4.2	
P1054	P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)?	3.4	4.9	
P1055	P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC AMPLIFIERS?	1.1	2.0	
P1056	P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS?	1.1	2.0	
P1057	P3-14 DO YOU WORK WITH MAGNETRONS?	2.2	.7	
P1058	P3-15 DO YOU WORK WITH BACKWARD WAVE OSCILLATORS (BWO)?	2.2	.0	
P1059	P3-16 DO YOU INSPECT KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	.0	2.1	
P1060	P3-17 DO YOU CLEAN KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	.0	.0	
P1061	P3-18 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY?	.0	.7	
P1062	P3-19 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY?	.0	2.1	
P1063	P3-20 DO YOU PERFORM OPERATIONAL CHECKS ON KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	.0	3.5	
P1064	P3-21 DO YOU TROUBLESHOOT KLYSTRONS OR TRAVELING WAVE TUBES (TWT)?	.0	3.5	
P1065	P3-22 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRONS OR TWT'S?	.0	1.4	
P1066	P3-23 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS?	.0	.7	
P1067	P3-24 DO YOU INSPECT PARAMETRIC AMPLIFIERS?	.0	1.4	

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O TSK	TITLES	205 (M)	307 (M)	70 (M)
P1068	P3-25 DO YOU CLEAN PARAMETRIC AMPLIFIERS?	.0	.7	
P1069	P3-26 DO YOU ADJUST PARAMETRIC AMPLIFIERS?	.0	1.4	
P1070	P3-27 DO YOU TUNE PARAMETRIC AMPLIFIERS?	.0	1.4	
P1071	P3-28 DO YOU PERFORM OPERATIONAL CHECKS ON PARAMETRIC AMPLIFIERS?	.0	2.8	
P1072	P3-29 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS?	.0	2.8	
P1073	P3-30 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIERS?	.0	.7	
P1074	P3-31 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS?	.0	.7	
P1075	P3-32 DO YOU INSPECT MAGNETRONS?	.0	.7	
P1076	P3-33 DO YOU CLEAN MAGNETRONS?	.0	.0	
P1077	P3-34 DO YOU ADJUST MAGNETRONS?	.0	.7	
P1078	P3-35 DO YOU TUNE MAGNETRONS?	.0	.7	
P1079	P3-36 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS?	.0	1.4	
P1080	P3-37 DO YOU TROUBLESHOOT MAGNETRONS?	.0	.7	
P1081	P3-38 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRONS?	.0	.0	
P1082	P3-39 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS?	.0	.0	
P1083	P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF COLLECTOR PLATE COMPONENTS OF TWO-CAVITY KLYSTRONS?	1.1	.7	
P1084	P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATCHER CAVITY COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.0	
P1085	P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATCHER GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.7	
P1086	P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FEEDBACK LOOP COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.0	
P1087	P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF DRIFT SPACE COMPONENTS OF TWO-CAVITY KLYSTRONS?	1.1	.0	
P1088	P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF BUNCHER GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	1.1	.0	
P1089	P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF BUNCHER CAVITY COMPONENTS OF TWO-CAVITY KLYSTRONS?	.0	.0	
P1090	P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CONTROL GRID COMPONENTS OF TWO-CAVITY KLYSTRONS?	1.1	.7	
P1091	P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF TWO-CAVITY KLYSTRONS?	2.2	.7	
P1092	P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REPELLER (REFLECTOR) PLATE COMPONENTS OF REFLEX KLYSTRONS?	.0	2.8	
P1093	P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF GRID COMPONENTS OF REFLEX KLYSTRONS?	.0	1.4	
P1094	P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF GRID CAVITY GAP COMPONENTS OF REFLEX KLYSTRONS?	.0	1.4	
P1095	P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF RESONANT CAVITY COMPONENTS OF REFLEX KLYSTRONS?	2.2	3.5	
P1096	P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MAGNETIC COUPLING LOOP COMPONENTS OF REFLEX KLYSTRONS?	.0	2.1	
P1097	P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FILAMENT COMPONENTS OF REFLEX KLYSTRONS?	1.1	2.1	

RESLER ELECTRONIC PRINCIPLES INVENTORY DATA

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O TSM	TITLES	205 307 70 70 (M) (M)		
		2.2	2.1	
P1098	P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF REFLEX KLYSTRONS?	2.2	2.1	
P1099	P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF OUTPUT LEAD COMPONENTS OF REFLEX KLYSTRONS?	1.1	.7	
P1100	P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF FILAMENT COMPONENTS OF TRAVELING-WAVE TUBES?	3.4	1.4	
P1101	P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF CATHODE COMPONENTS OF TRAVELING-WAVE TUBES?	3.4	1.4	
P1102	P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MODULATOR GRID COMPONENTS OF TRAVELING-WAVE TUBES?	3.4	.7	
P1103	P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF ANODE COMPONENTS OF TRAVELING-WAVE TUBES?	3.4	1.4	
P1104	P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF HELIX COMPONENTS OF TRAVELING-WAVE TUBES?	2.2	1.4	
P1105	P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF COLLECTOR COMPONENTS OF TRAVELING-WAVE TUBES?	3.4	1.4	
P1106	P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF MAGNET COMPONENTS OF TRAVELING-WAVE TUBES?	2.2	.7	
P1107	P3-64 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF ATTENUATOR COMPONENTS OF TRAVELING-WAVE TUBES?	1.1	.7	
P1108	P3-65 DO YOU PERFORM TASKS ON FERRITE CIRCULATOR COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.0	
P1109	P3-66 DO YOU PERFORM TASKS ON SIGNAL CAVITY COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.7	
P1110	P3-67 DO YOU PERFORM TASKS ON IDLER CAVITY COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.0	
P1111	P3-68 DO YOU PERFORM TASKS ON VARACTOR DIODE COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.0	
P1112	P3-69 DO YOU PERFORM TASKS ON FERRITE ISOLATOR COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.0	
P1113	P3-70 DO YOU PERFORM TASKS ON REVERSE-BIAS BATTERY COMPONENTS OF PARAMETRIC AMPLIFIERS?	.0	.0	
P1114	P3-71 DO YOU PERFORM TASKS ON ANODE COMPONENTS OF MAGNETRONS?	1.1	.0	
P1115	P3-72 DO YOU PERFORM TASKS ON ANODE COOLING PIN COMPONENTS OF MAGNETRONS?	1.1	.0	
P1116	P3-73 DO YOU PERFORM TASKS ON COUPLING LOOP COMPONENTS OF MAGNETRONS?	1.1	.0	
P1117	P3-74 DO YOU PERFORM TASKS ON HEATER LEAD COMPONENTS OF MAGNETRONS?	1.1	.0	
P1118	P3-75 DO YOU PERFORM TASKS ON RESONANT CAVITY COMPONENTS OF MAGNETRONS?	1.1	.0	
P1119	P3-76 DO YOU PERFORM TASKS ON CATHODE COMPONENTS OF MAGNETRONS?	1.1	.0	
P1120	P3-77 DO YOU PERFORM TASKS ON MAGNET COMPONENTS OF MAGNETRONS?	.0	.0	

205 307
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D YSK TITLES

0 REGISTERS (Q1), STORAGE DEVICES (Q2), DIGITAL-TO-ANALOG AND
ANALOG-TO-DIGITAL CONVERTERS (Q3)

Q1121 Q1-1 DO YOU USE OR REFER TO STORAGE REGISTERS? 10.1 7.0
Q1122 Q1-2 DO YOU USE OR REFER TO SHIFT REGISTERS? 11.2 7.0
Q1123 Q1-3 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT
REGISTERS? 5.6 4.2
Q1124 Q1-4 DO YOU USE OR REFER TO LOGIC SYMBOLS OR STORAGE
REGISTERS? 3.4 4.2
Q1125 Q1-5 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF
SHIFT REGISTER CIRCUITS? 5.6 3.5
Q1126 Q1-6 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF
OTHER TYPES OF REGISTER CIRCUITS? 3.4 2.0
Q1127 Q1-7 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A
SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES
HAVE PASSED? 4.5 2.0
Q1128 Q2-1 DO YOU WORK WITH STORAGE DEVICES IN YOUR PRESENT JOB?
IF NO, GO TO ITEM Q3-11 IF YES, CONTINUE. 59.6 12.6
Q1129 Q2-2 DO YOU USE OR REFER TO DELAY LINES? 12.4 .0
Q1130 Q2-3 DO YOU USE OR REFER TO MAGNETIC CORES OR BIMAGS? 7.9 2.1
Q1131 Q2-4 DO YOU USE OR REFER TO MAGNETIC DRUMS? 10.1 5.6
Q1132 Q2-5 DO YOU USE OR REFER TO MAGNETIC TAPES? 59.6 11.9
Q1133 Q2-6 DO YOU USE OR REFER TO ACCESS TIME OR SPEED OF MEMORY
SYSTEMS? 33.7 7.0
Q1134 Q2-7 DO YOU USE OR REFER TO STORAGE CAPACITY OF MEMORY
SYSTEMS? 41.6 10.5
Q1135 Q2-8 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS? 14.6 7.0
Q1136 Q2-9 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES? 2.2 .0
Q1137 Q2-10 DO YOU USE OR REFER TO MAGNETIC DISKS? 55.1 11.2
Q1138 Q2-11 DO YOU USE OR REFER TO THIN FILMS? 6.7 .0
Q1139 Q2-12 DO YOU USE OR REFER TO SEMICONDUCTOR MEMORY
(INTEGRATED) CIRCUITS? 13.5 4.9
Q1140 Q2-13 DO YOU USE OR REFER TO BUBBLE MEMORIES? 4.5 2.1
Q1141 Q2-14 DO YOU USE OR REFER TO PUNCH CARDS? 24.7 7.7
Q1142 Q2-15 DO YOU USE OR REFER TO PAPER TAPES? 29.2 7.0
Q1143 Q2-16 DO YOU USE OR REFER TO RANDOM ACCESS MEMORIES (RAM)? 34.8 9.8
Q1144 Q2-17 DO YOU USE OR REFER TO READ ONLY MEMORIES (ROM)? 33.7 9.1
Q1145 Q2-18 DO YOU USE OR REFER TO PROGRAMMABLE READ ONLY
MEMORIES (PROM)? 21.3 7.7
Q1146 Q2-19 DO YOU USE OR REFER TO TRANSFORMER READ ONLY STORAGE
(TROS)? 4.5 .0
Q1147 Q2-20 DO YOU USE OR REFER TO CAPACITY READ ONLY STORAGE
(CROS)? 3.4 .0
Q1148 Q2-21 DO YOU INSPECT STORAGE DEVICES? 13.5 4.2
Q1149 Q2-22 DO YOU CLEAN STORAGE DEVICES? 11.2 1.4
Q1150 Q2-23 DO YOU ALIGN STORAGE DEVICES? 3.4 .0
Q1151 Q2-24 DO YOU ADJUST STORAGE DEVICES? 4.5 .0
Q1152 Q2-25 DO YOU TROUBLESHOOT MEMORY SYSTEM STORAGE DEVICES? 3.4 4.2
Q1153 Q2-26 DO YOU REMOVE OR REPLACE SUBASSEMBLIES OR COMPONENTS
OF STORAGE DEVICES? 5.6 .0

D TSM	TITLES	205 (M)	307 (M)
Q1154 Q2-27	DO YOU TRACE SIGNAL FLOW IN STORAGE DEVICES USING LOGIC DIAGRAMS OR SCHEMATICS?	6.7	.7
Q1155 Q3-1	IN YOUR PRESENT JOB, DO YOU WORK WITH DIGITAL-TO-ANALOG (D/A) CONVERTERS OR ANALOG-TO-DIGITAL (A/D) CONVERTERS? IF NO, GO TO ITEM R1-11 IF YES, CONTINUE.	21.3	33.6
Q1156 Q3-2	DO YOU COMPUTE OUTPUT VOLTAGES FOR ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS FOR GIVEN INPUT VOLTAGES?	1.1	4.2
Q1157 Q3-3	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE COUNT IN ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A) CONVERTERS IS DETERMINED BY ADDING THE DENOMINATORS OF THE RESISTORS?	.0	1.4
Q1158 Q3-4	DO YOU COMPUTE ANALOG VOLTAGES FOR GIVEN BINARY COUNTS IN ELECTRONIC DIGITAL-TO-ANALOG (D/A) CONVERTERS?	.0	1.4
Q1159 Q3-5	DO YOU PERFORM TASKS ON SAMPLE FUNCTION PORTIONS OF ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS?	4.5	5.6
Q1160 Q3-6	DO YOU PERFORM TASKS ON HOLD FUNCTION PORTIONS OF ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS?	1.1	2.8
Q1161 Q3-7	DO YOU PERFORM TASKS ON COMPARE FUNCTION PORTIONS OF ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS?	1.1	2.1
Q1162 Q3-8	DO YOU PERFORM TASKS ON DIGITIZE FUNCTION PORTIONS OF ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS?	7.9	3.5
Q1163 Q3-9	DO YOU PERFORM TASKS ON PORTIONS OF ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS BUT DON'T KNOW WHICH FUNCTION?	1.1	4.9
Q1164 Q3-10	DO YOU USE OR REFER TO SAMPLE FUNCTION OF A/D CONVERTERS?	5.6	7.0
Q1165 Q3-11	DO YOU USE OR REFER TO HOLD FUNCTION OF A/D CONVERTERS?	4.5	3.5
Q1166 Q3-12	DO YOU USE OR REFER TO COMPARE FUNCTION OF A/D CONVERTERS?	3.4	2.8
Q1167 Q3-13	DO YOU USE OR REFER TO DIGITAL FUNCTION OF A/D CONVERTERS?	9.0	7.7
Q1168 Q3-14	DO YOU PERFORM ANY TASKS ON MECHANICAL ANALOG-TO-DIGITAL (A/D) CONVERTERS?	.0	2.1
Q1169 Q3-15	DO YOU PERFORM ANY TASKS ON ELECTRONIC A/D CONVERTERS?	5.6	14.0
Q1170 Q3-16	DO YOU PERFORM ANY TASKS ON DIGITAL-TO-ANALOG (D/A) CONVERTERS?	2.2	11.9
Q1171 Q3-17	DO YOU OPERATE COMPUTER KEYBOARDS?	19.1	14.0
Q1172 Q3-18	DO YOU WORK AT OR WITH COMPUTER TERMINALS?	19.1	18.2
Q1173 Q3-19	HAVE YOU BEEN SENT TO FACTORY TRAINING OR TO ANY OTHER SCHOOL FOR THE SPECIFIC PURPOSE OF RECEIVING COMPUTER OR LOGIC CIRCUIT RELATED TRAINING?	3.4	.7
Q1174 Q3-20	DO YOU HAVE MICROPROCESSORS OR COMPUTER EQUIPMENT LOCATED AT YOUR WORK STATION WHICH IS OPERATED OR MAINTAINED BY CONTRACTOR PERSONNEL?	14.6	12.6
Q1175 Q3-21	WAS THE COMPUTER OR LOGIC CIRCUIT TRAINING YOU RECEIVED IN YOUR 3-LEVEL AWARDDING COURSE ADEQUATE IN TERMS OF YOUR PRESENT DUTIES?	1.1	5.6

205 307
70 70
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D TSM TITLES

Q1176 Q3-22 ARE YOU ASSIGNED AGAINST A POSITION WHICH REQUIRES A
"D" PREFIX?

.0 .0 .7

R PHANTASTRONS (R1), SCHMITT TRIGGERS (R2), CABLE
FABRICATION (R3)

R1177 R1-1 DO YOU WORK WITH PHANTASTRON CIRCUITRY? IF NO, GO TO
ITEM R2-1. IF YES, CONTINUE.

.0 2.1

R1178 R1-2 PHANTASTRON CIRCUITRY HAS VARIABLE-DELAY APPLICATIONS
IN MY JOB.

.0 .7

R1179 R1-3 PHANTASTRON CIRCUITRY HAS SEARCH-LOCK AUTOMATIC
FREQUENCY CONTROLS (AFC) APPLICATIONS IN MY JOB.

.0 1.4

R1180 R1-4 PHANTASTRON CIRCUITRY HAS MONOSTABLE MULTIVIBRATORS
APPLICATIONS IN MY JOB.

.0 .7

R1181 R1-5 PHANTASTRON CIRCUITRY HAS BISTABLE MULTIVIBRATORS
APPLICATIONS IN MY JOB.

.0 .7

R1182 R1-6 PHANTASTRON CIRCUITRY HAS FREE-RUNNING MULTIVIBRATORS
APPLICATIONS IN MY JOB.

.0 .7

R1183 R2-1 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER
CIRCUITS? IF NO, GO TO ITEM R3-1; IF YES, CONTINUE.

6.7 .7

R1184 R2-2 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER
SCHEMATIC DIAGRAMS?

1.1 .0

R1185 R2-3 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS?

.0 .0

R1186 R3-1 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTOR
CABLES?

1.1 14.0

R1187 R3-2 DO YOU FABRICATE COAXIAL CABLES?

2.2 14.7

S INPUT/OUTPUT (PERIPHERAL) DEVICES (S1), PHOTO SENSITIVE
DEVICES (S2), SYNCHRONOUS VIBRATIONS (CHOPPER
CIRCUITS) (S3)

S1188 S1-1 DO YOU WORK WITH INPUT OR OUTPUT DEVICES ON YOUR
PRESENT JOB? IF NO, GO TO ITEM S2-1; IF YES, CONTINUE.

78.7 76.9

S1189 S1-2 DO YOU USE OR REFER TO KEYBOARDS OR TELETYPEWRITERS?

79.8 76.2

S1190 S1-3 DO YOU USE OR REFER TO PRINTERS?

66.3 75.5

S1191 S1-4 DO YOU USE OR REFER TO TAPE DRIVES (UNITS)?

57.3 29.4

S1192 S1-5 DO YOU USE OR REFER TO CARD READERS/CARD PUNCHES?

27.0 21.7

S1193 S1-6 DO YOU USE OR REFER TO VIDEO DISPLAYS (CRT'S)?

77.5 49.0

S1194 S1-7 DO YOU USE OR REFER TO MIXIE LIGHTS (TUBES)?

30.3 18.2

S1195 S1-8 DO YOU USE OR REFER TO LED'S?

47.2 44.1

S1196 S1-9 DO YOU USE OR REFER TO LCD'S?

25.8 23.1

S1197 S1-10 DO YOU USE OR REFER TO INCANDESCENT DISPLAYS?

10.1 11.2

S1198 S1-11 DO YOU USE OR REFER TO TOGGLE OR PUSH BUTTON SWITCH
INPUTS?

44.9 35.0

S1199 S1-12 DO YOU USE OR REFER TO INTERFACE ADAPTER UNITS?

24.7 35.7

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O TSM	TITLES	205 70 (M)	307 70 (M)
S1200	S1-13 DO YOU USE OR REFER TO IAPE READERS?	39.3	38.5
S1201	S1-14 DO YOU USE OR REFER TO TAPE PUNCHES?	37.1	35.0
S1202	S2-1 DO YOU WORK WITH PHOTODIODE PHOTO SENSITIVE DEVICES?	1.1	1.4
S1203	S2-2 DO YOU WORK WITH PHOTOTRANSISTOR PHOTO SENSITIVE DEVICES?	1.1	.7
S1204	S2-3 DO YOU WORK WITH PHOTOTUBE PHOTO SENSITIVE DEVICES?	1.1	.7
S1205	S2-4 DO YOU WORK WITH PHOTO-SCR PHOTO SENSITIVE DEVICES?	1.1	.7
S1206	S2-5 DO YOU WORK WITH PHOTOCCELL (PHOTOCONDUCTIVE OR PHOTOVOLTAIC) PHOTO SENSITIVE DEVICES?	1.1	3.5
S1207	S3-1 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS?	1.1	.0
	IF NO, GO TO ITEM T1-11 IF YES, CONTINUE.		
S1208	S3-2 DO YOU USE OR REFER TO EXCITATION FREQUENCY CHOPPER COIL ITEMS?	.0	.0
S1209	S3-3 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIP CHOPPER COIL ITEMS?	.0	.0
S1210	S3-4 DO YOU MEASURE EXCITATION FREQUENCY CHOPPER COIL ITEMS?	.0	.0
S1211	S3-5 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIP CHOPPER COIL ITEMS?	.0	.0
S1212	S3-6 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.0	.0
S1213	S3-7 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.0	.0
S1214	S3-8 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.0	.0
S1215	S3-9 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION?	.0	.0

T	INFRARED (T1), LASERS (T2), DISPLAY TUBES (T3), TELEVISION (T4)		

T1216	T1-1 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS? IF NO, GO TO ITEM T2-1; IF YES, CONTINUE.	2.2	.7
T1217	T1-2 DO YOU INSPECT INFRARED SYSTEMS?	.0	.0
T1218	T1-3 DO YOU CLEAN INFRARED SYSTEMS?	.0	.0
T1219	T1-4 DO YOU SERVICE INFRARED SYSTEMS?	.0	.0
T1220	T1-5 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS?	.0	.0
T1221	T1-6 DO YOU OPERATE INFRARED SYSTEMS?	.0	.0
T1222	T1-7 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS?	.0	.0
T1223	T1-8 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS?	.0	.0
T1224	T1-9 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS?	.0	.0
T1225	T1-10 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS?	.0	.0

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O TSM	TITLES	205 (M)	307 70 (M)
T1226	T1-11 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS?	.0	.0
T1227	T1-12 DO YOU USE OR REFER TO FAR REGIONS?	1.1	.0
T1228	T1-13 DO YOU USE OR REFER TO INTERMEDIATE REGIONS?	1.1	.0
T1229	T1-14 DO YOU USE OR REFER TO NEAR REGIONS?	1.1	.0
T1230	T1-15 DO YOU USE OR REFER TO MICRONS (M)?	1.1	.0
T1231	T1-16 DO YOU USE OR REFER TO GRAY BODIES?	1.1	.0
T1232	T1-17 DO YOU USE OR REFER TO BLACK BODIES?	1.1	.0
T1233	T1-18 DO YOU USE OR REFER TO ABSORPTION?	1.1	.0
T1234	T1-19 DO YOU USE OR REFER TO SCATTERING?	1.1	.0
T1235	T1-20 DO YOU USE OR REFER TO ABSOLUTE ZERO?	1.1	.0
T1236	T1-21 DO YOU PERFORM TASKS ON BLITZ?	.0	.0
T1237	T1-22 DO YOU PERFORM TASKS ON TARGET BUTTONS?	.0	.0
T1238	T1-23 DO YOU PERFORM TASKS ON ERECTOR LENSES?	.0	.0
T1239	T1-24 DO YOU PERFORM TASKS ON OCULAR LENSES?	.0	.0
T1240	T1-25 DO YOU PERFORM TASKS ON CORRECTION LENSES?	.0	.0
T1241	T1-26 DO YOU PERFORM TASKS ON FILTERS?	.0	.0
T1242	T1-27 DO YOU PERFORM TASKS ON SPHERICAL MIRRORS?	.0	.0
T1243	T1-28 DO YOU PERFORM TASKS ON PLANE MIRRORS?	.0	.0
T1244	T2-1 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS? IF NO, GO TO ITEM T3-11. IF YES, CONTINUE.	2.2	.7
T1245	T2-2 DO YOU INSPECT LASER SYSTEMS?	.0	.0
T1246	T2-3 DO YOU CLEAN LASER SYSTEMS?	.0	.0
T1247	T2-4 DO YOU SERVICE LASER SYSTEMS?	.0	.0
T1248	T2-5 DO YOU OPERATE LASER SYSTEMS?	.0	.0
T1249	T2-6 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS?	.0	.0
T1250	T2-7 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS?	.0	.0
T1251	T2-8 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS?	.0	.0
T1252	T2-9 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS?	.0	.0
T1253	T2-10 DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS?	.0	.0
T1254	T2-11 DO YOU USE OR REFER TO ANGSTROMS (A)?	1.1	.0
T1255	T2-12 DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS?	.0	.0
T1256	T2-13 DO YOU USE OR REFER TO GROUND STATE?	.0	.0
T1257	T2-14 DO YOU USE OR REFER TO EXCITED STATE?	.0	.0
T1258	T2-15 DO YOU USE OR REFER TO PACKET OF RADIATION?	.0	.0
T1259	T2-16 DO YOU USE OR REFER TO PHOTONS?	.0	.0
T1260	T2-17 DO YOU USE OR REFER TO SPONTANEOUS EMISSIONS?	.0	.0
T1261	T2-18 DO YOU USE OR REFER TO STIMULATED EMISSIONS?	.0	.0
T1262	T2-19 DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE?	1.1	.0
T1263	T2-20 DO YOU USE OR REFER TO INVERSION LEVELS?	.0	.0
T1264	T2-21 DO YOU USE OR REFER TO MONOCHROMATIC?	.0	.0
T1265	T2-22 DO YOU WORK WITH ACTIVE MATERIALS?	.0	.0
T1266	T2-23 DO YOU WORK WITH PUMPING SOURCES?	.0	.0
T1267	T2-24 DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS?	.0	.0

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O TSK	TITLES	205 (M)	307 (M)
11260	12-25 DO YOU WORK WITH HALF SILVERED 1928 REFLECTIVE MIRRORS?	.0	.0
11269	12-26 DO YOU WORK WITH MELICAL FLASHTUBES?	.0	.0
11270	12-27 DO YOU WORK WITH RUBY MATERIALS?	.0	.0
11271	12-28 DO YOU WORK WITH MELIUM-NEON MATERIALS?	.0	.0
11272	12-29 DO YOU WORK WITH MELIUM-XENON MATERIALS?	.0	.0
11273	12-30 DO YOU WORK WITH XENON MATERIALS?	.0	.0
11274	12-31 DO YOU WORK WITH CESIUM-HELIUM MATERIALS?	.0	.0
11275	12-32 DO YOU WORK WITH ARGON MATERIALS?	.0	.0
11276	12-33 DO YOU WORK WITH NEODYMIUM IN GLASS MATERIALS?	.0	.0
11277	12-34 DO YOU WORK WITH GALLIUM ARSENIDE MATERIALS?	.0	.0
11278	13-1 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE TUBES IDVSTL, MULTIPLE MODE STORAGE TUBES (MMST), OR SCAN CONVERTER TUBES (SCT)? IF NO, GO TO ITEM 14-1; IF YES, CONTINUE.	3.4	1.4
11279	13-2 DO YOU INSPECT DVST OR MMST?	1.1	.0
11280	13-3 DO YOU CLEAN DVST OR MMST?	1.1	.0
11281	13-4 DO YOU ADJUST OR CALIBRATE DVST OR MMST?	1.1	.0
11282	13-5 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST?	2.2	.7
11283	13-6 DO YOU TROUBLESHOOT DVST OR MMST CIRCUITS?	.0	.0
11284	13-7 DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM MAJOR ASSEMBLIES OR UNITS?	.0	.0
11285	13-8 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF DVST?	1.1	.7
11286	13-9 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF MMST?	1.1	.7
11287	13-10 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME VARIOUS ELEMENTS OF SCT?	.0	.7
11288	13-11 DO YOU PERFORM TASKS ON FLOOD GUNS?	.0	.0
11289	13-12 DO YOU PERFORM TASKS ON WRITE GUNS?	.0	.0
11290	13-13 DO YOU PERFORM TASKS ON READ GUNS?	.0	.0
11291	13-14 DO YOU PERFORM TASKS ON ATTACK GUNS?	.0	.0
11292	13-15 DO YOU PERFORM TASKS ON ERASE GUNS?	.0	.0
11293	13-16 DO YOU PERFORM TASKS ON STORAGE GRIDS?	.0	.0
11294	14-1 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS DEALING WITH TELEVISION SYSTEMS INCLUDING LOW LIGHT TELEVISION? IF NO, GO TO ITEM 14-1; IF YES, CONTINUE.	4.5	1.4
11295	14-2 DO YOU INSPECT TELEVISION SYSTEMS?	1.1	.0
11296	14-3 DO YOU CLEAN TELEVISION SYSTEMS?	1.1	.0
11297	14-4 DO YOU ADJUST OR CALIBRATE TELEVISION SYSTEMS?	1.1	.0
11298	14-5 DO YOU OPERATE TELEVISION SYSTEMS?	3.4	.0
11299	14-6 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF TV SYSTEMS?	1.1	.0
11300	14-7 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF TV SYSTEMS?	.0	.0
11301	14-8 DO YOU TROUBLESHOOT DOWN TO TV SYSTEM COMPONENT PARTS?	.0	.0
11302	14-9 DO YOU REMOVE OR REPLACE TV SYSTEM MAJOR ASSEMBLIES?	.0	.0
11303	14-10 DO YOU REMOVE OR REPLACE TV SYSTEM COMPONENT PARTS?	.0	.0

205 307
70 70
(M) (M)

D TSK TITLES

U COMPUTERS, MICROPROCESSORS, AND PROGRAMMING (U1), DB AND
POWER RATIOS (U2)

U1304 U1-1 IN YOUR PRESENT JOB, DO YOU PERFORM MAINTENANCE
ROUTINES OR PROGRAMMING TASKS? IF NO, GO TO ITEM U2-1; IF
YES, CONTINUE.

13.5 12.6

U1305 U1-2 DO YOU USE OR REFER TO DECIMAL SYSTEMS?

7.9 7.0

U1306 U1-3 DO YOU USE OR REFER TO OCTAL SYSTEMS?

6.7 4.2

U1307 U1-4 DO YOU USE OR REFER TO PARITY DETECTORS/GENERATORS?

2.2 4.9

U1308 U1-5 DO YOU USE OR REFER TO HEXADECIMAL SYSTEMS?

5.6 4.9

U1309 U1-6 DO YOU USE OR REFER TO 8-4-2-1 SYSTEMS?

.0 2.1

U1310 U1-7 DO YOU USE OR REFER TO FOUR SYSTEMS?

.0 1.4

U1311 U1-8 DO YOU USE OR REFER TO BINARY SYSTEMS?

10.1 7.7

U1312 U1-9 DO YOU USE OR REFER TO TIME-SHARING
(MULTI-SEQUENCING)?

9.0 5.6

U1313 U1-10 DO YOU USE OR REFER TO DATA WORDS?

9.0 9.1

U1314 U1-11 DO YOU USE OR REFER TO ADDRESS WORDS?

9.0 8.4

U1315 U1-12 DO YOU USE OR REFER TO ADDRESS/SUBADDRESS?

5.6 7.7

U1316 U1-13 DO YOU USE OR REFER TO STEERING/INFORMATION?

1.1 2.1

U1317 U1-14 DO YOU USE OR REFER TO INSTRUCTION WORDS?

6.7 8.4

U1318 U1-15 DO YOU USE OR REFER TO DAP-16?

.0 .7

U1319 U1-16 DO YOU USE OR REFER TO BINARY CODED DECIMAL (BCD)?

6.7 6.3

U1320 U1-17 DO YOU USE OR REFER TO CONTROL WORDS?

4.5 9.1

U1321 U1-18 DO YOU USE OR REFER TO RESPONSE WORDS?

2.2 7.7

U1322 U1-19 DO YOU USE OR REFER TO WRAPAROUND WORDS?

1.1 3.5

U1323 U1-20 DO YOU USE OR REFER TO TEST OR DIAGNOSTIC PROGRAMS?

3.4 10.5

U1324 U1-21 DO YOU USE OR REFER TO RELIABILITY PROGRAMS?

2.2 4.2

U1325 U1-22 DO YOU USE OR REFER TO COMPILERS?

5.6 2.8

U1326 U1-23 DO YOU USE OR REFER TO ASSEMBLERS?

4.5 3.5

U1327 U1-24 DO YOU USE OR REFER TO MACHINE LANGUAGE?

6.7 4.2

U1328 U1-25 DO YOU USE OR REFER TO MNEMONICS?

1.1 5.6

U1329 U1-26 DO YOU USE OR REFER TO ROUTINES OR SUBROUTINES?

9.0 8.4

U1330 U1-27 DO YOU USE OR REFER TO FLOW CHARTS OR DIAGRAMS?

9.0 6.3

U1331 U1-28 DO YOU USE OR REFER TO 'ATLAS'?

.0 .7

U1332 U1-29 DO YOU USE OR REFER TO 'ELAN'?

.0 .7

U1333 U1-30 DO YOU PERFORM TASKS ON SINGLE LEVEL PROGRAMMING
SYSTEMS?

2.2 3.5

U1334 U1-31 DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING
SYSTEMS?

2.2 2.1

U1335 U1-32 DO YOU WRITE PROGRAMS FOR TROUBLESHOOTING OF SPECIFIC
CIRCUITS?

.0 2.8

U1336 U1-33 DO YOU USE PROGRAMS FOR TROUBLESHOOTING OF SPECIFIC
CIRCUITS?

2.2 5.6

U1337 U1-34 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER
CONTROL SECTIONS?

5.6 3.5

U1338 U1-35 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER INPUT
SECTIONS?

6.7 5.6

U1339 U1-36 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER OUTPUT
SECTIONS?

6.7 4.9

D TSM	TITLES	205 (M)	307 (M)
U1340	U1-37 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER MONITOR SECTIONS?	6.7	7.0
U1341	U1-38 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER TRANSMIT SECTIONS?	5.6	6.3
U1342	U1-39 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER RECEIVE SECTIONS?	6.7	6.3
U1343	U1-40 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER INPUT DEVICES?	9.0	7.7
U1344	U1-41 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER STORAGE DEVICES?	5.6	5.6
U1345	U1-42 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER OUTPUT DEVICES?	9.0	7.7
U1346	U1-43 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER POWER DEVICES?	4.5	4.9
U1347	U1-44 DO YOU PERFORM TASKS ON BASIC DIGITAL COMPUTER MONITOR DEVICES?	7.9	7.0
U1348	U1-45 DO YOU USE FORTRAN PROGRAMMING LANGUAGE?	11.2	2.1
U1349	U1-46 DO YOU USE COBOL PROGRAMMING LANGUAGE?	4.5	2.1
U1350	U1-47 DO YOU USE RPG PROGRAMMING LANGUAGE?	.0	.7
U1351	U1-48 DO YOU USE OR PERFORM TASKS ON MICROPROCESSOR BASED EQUIPMENT?	4.5	4.2
U1352	U1-49 DO YOU USE INPUT PORT LATCH CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	.0	2.1
U1353	U1-50 DO YOU USE OUTPUT PORT LATCH CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	.0	2.1
U1354	U1-51 DO YOU USE RAM MEMORY CIRCUITS (STATIC OR DYNAMIC) IN CONJUNCTION WITH THE MICROPROCESSOR?	4.5	7.7
U1355	U1-52 DO YOU USE ROM MEMORY CIRCUITS (INCLUDES PROM, EPROM, ETC.) IN CONJUNCTION WITH THE MICROPROCESSOR?	4.5	7.0
U1356	U1-53 DO YOU USE TRI-STATE CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	.0	.7
U1357	U1-54 DO YOU USE CLOCK GENERATOR CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	.0	4.9
U1358	U1-55 DO YOU USE STATUS LATCH CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	.0	1.4
U1359	U1-56 DO YOU USE BIDIRECTIONAL BUFFER CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	1.1	3.5
U1360	U1-57 DO YOU USE ENCODER/DECODER CIRCUITS IN CONJUNCTION WITH THE MICROPROCESSOR?	.0	2.8
U1361	U2-1 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION?	61.8	82.5
U1362	U2-2 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS?	24.7	43.4
U1363	U2-3 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS?	20.2	42.0
U1364	U2-4 DO YOU USE VTVM (DB METERS) TO CHECK FOR NOISE OR SIGNAL LEVEL?	10.1	70.6
U1365	U2-5 DO YOU USE VTVM (DB METERS) TO CHECK OR ADJUST AUDIO AMPLIFIERS?	7.9	64.3

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O TSM

TITLES

U1366 U2-6 DO YOU USE A HP1550 OR 344A TEST SET TO ALIGN AUDIO
EQUIPMENT?

205 307
70 70
(M) (M)

2.2 46.2

